FM 61-24

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DEPARTMENT OF THE ARMY FIELD MANUAL

Ch 4

Chapters 2 thru 15
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DIVISION COMMUNICATIONS

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FIELD MANUAL

DIVISION COMMUNICATIONS

FM 61-24, 7 June 1968, is changed as follows:

1. New or changed material is indicated by a star.

2. Remove old pages and insert new pages as indicated below:

Old pages	*New pages*
1-1 and 1-2	1-1 and 1-2
None	27-1 through 36-19
A-1 through A-4	A-1 through A-5

3. File this change sheet in front of the manual for reference purposes.

By Order of the Secretary of the Army:

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FIELD MANUAL
No. 61-24

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *7 June 1968*

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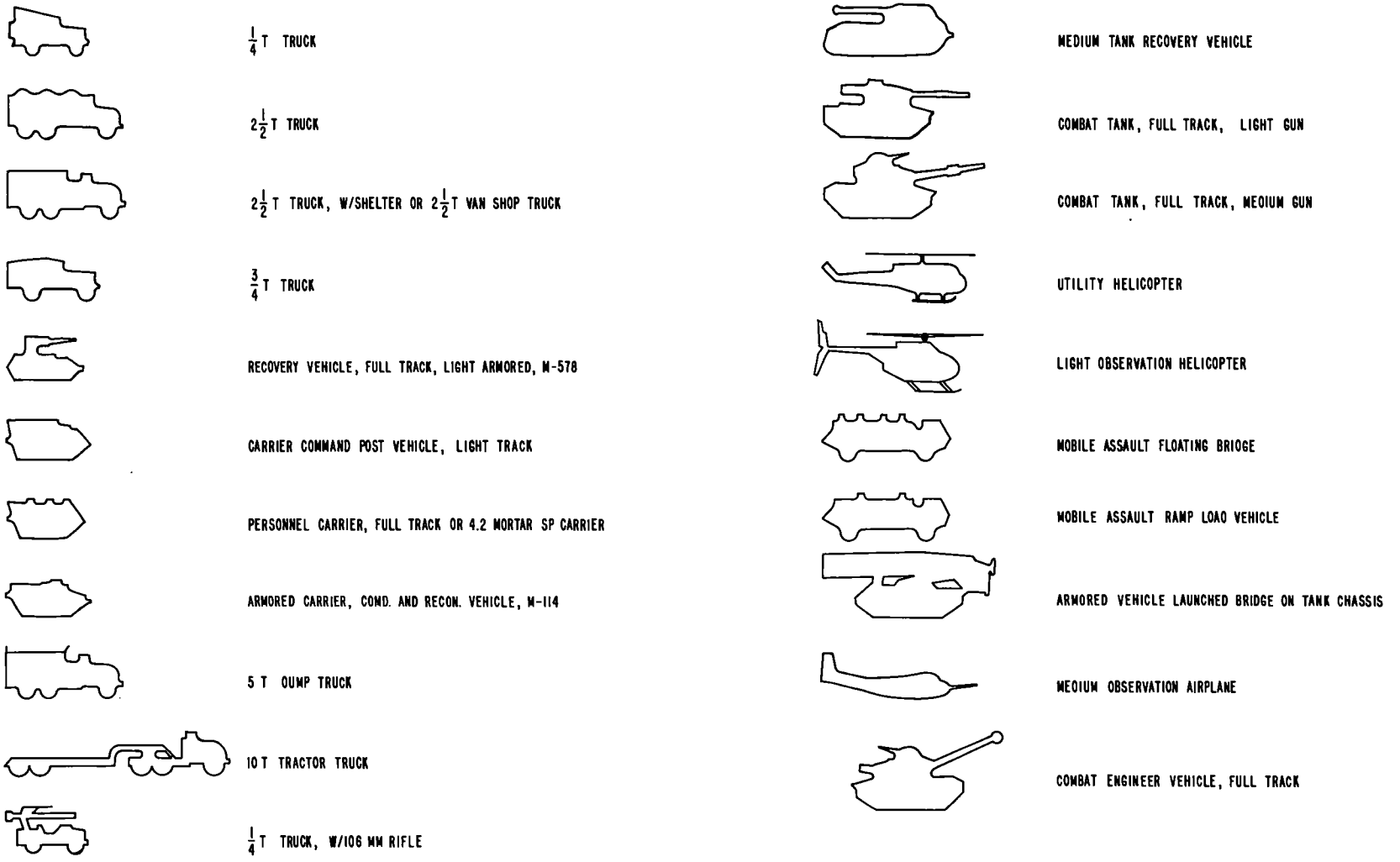


Figure 1. Type vehicle and aircraft illustrations used in this manaul.

PART ONE
COMMUNICATIONS IN THE ARMORED, INFANTRY, AND INFANTRY (MECHANIZED) DIVISIONS

CHAPTER 1
INTRODUCTION

1–1. Purpose

This manual is a doctrinal guide for commanders, staff officers, and personnel concerned with communications in the armored, infantry, infantry (mechanized), airmobile, and airborne divisions as organized under TOE 7, 17, 37, 67, and 57. It presents essential guidelines which, when coupled with experience, judgment, and foresight, enable commanders and other key personnel to develop the most effective communications for the accomplishment of assigned missions.

1–2. Scope

a. The basic scope of this manual is confined to a detailed but nontechnical explanation of essential facts required to employ an efficient division tactical communication system under typical military conditions.

b. To facilitate use of this manual as a reference guide, it is divided into three parts:

(1) Part One: Communications in the Armored, Infantry, and Infantry (Mechanized) Divisions.

(2) Part Two: Communications in the Airborne Division.

★(3) Part Three: Communications in the Airmobile Division. Chapters 27 through 36 contain added coverage on communications operations, equipment, and personnel of the airmobile division. The material in these chapters is complete in itself for the airmobile division and relates to other portions of this manual only when specifically notated.

c. So far as appropriate and practicable, material herein presented is applicable to—

(1) General war, to include a consideration for the employment of, and protection from, nuclear munitions and chemical, biological, and radiological agents, and operations in nuclear, chemical, or biological environments.

(2) Limited war.

(3) Cold war to include stability operations—appendix B contains material applicable to stability operations from the standpoint of essential signal communications.

d. The material in this manual agrees with applicable portions of STANAG 2043, Principles and Procedures for Establishing Communications (SOLOG 15R2).

1–3. References

a. Publications and other reference material pertaining to subjects within the scope of this manual are listed in appendix A. As indicated (para 1–2), appendix B presents general guidelines applicable to communications aspects in stability operations.

b. To avoid needless repetition, FM 24–1 should be used in conjunction with this manual. FM 24–1 presents basic doctrinal information on such topics as communication means, employment, principles, responsibilities, and security.

★1–4. Comments on Manual

Users of this manual are encouraged to submit recommended changes or comments to improve

the manual. Comments should be keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be prepared using DA Forms 2028 (Recommended Changes to Publications) and forwarded direct to the Commaning Officer, U.S. Army Combat Developments Command Communications-Electronics Agency, ATTN: Doctrine Division, Fort Monmouth, New Jersey 07703.

1–5. Designation of Units

a. Throughout this manual where the word *battalion* appears in general sense (battalion commander, battalion staff, battalion trains), it is considered as applying equally to the squadron. Likewise, a general reference to *company* applies equally to the cavalry troop and the artillery battery.

b. Hereafter in this manual, the infantry (mechanized) division will be referred to as the mechanized division.

1–6. Personnel and Equipment Strength

Narrative and illustrative coverage of this manual is based on level one (full strength) allocations of communication personnel and equipment by pertinent TOE. When units operate at levels two and three, 90 percent and 80 percent of full strength respectively, some curtailment in communication employment may be necessary.

CHAPTER 2

ORGANIZATION AND PERSONNEL FOR DIVISION COMMUNICATIONS

Section I. ORGANIZATION

2-1. General

Unit organization to provide internal communications varies within the different subordinate elements of the division. Since these communication organizations do vary, pertinent TOE must be consulted to determine the unit organizational structure for communications. Typical division communications organizations normally existing are summarized in paragraph 2-2.

2-2. Division Signal Organization

a. Division Signal Battalion. A division signal battalion provides communications support at echelons of the division headquarters, between echelons of division headquarters, and from division headquarters echelons to subordinate units. Details on the function, mission, and organization of the division signal battalion are discussed in chapter 5.

b. Communications Platoons. Certain subordinate units of the division are assigned platoons in their headquarters company organization to perform the communication function. Some communication platoons, as in the brigade, are subdivided into sections along mission lines; for example, radio section, wire section, and message center section. Other communication platoons, as in the infantry battalion are organized without subdivisions into sections—team organization for specific functions are established as required. Normally, division units of the types listed below are authorized, communications platoons:

(1) Brigades.

(2) Combat battalions such as infantry, tank, cavalry, mechanized infantry, airborne infantry, and airmobile infantry.

(3) Division artillery headquarters.

(4) Field artillery battalion.

(5) Aviation group of airmobile division.

c. Communications Section. By TOE, other division subordinate units are authorized a communications section and not a communications platoon. A typical list of such units is shown below:

(1) Aviation battalion of the infantry and airborne divisions.

(2) Engineer battalion.

(3) Field artillery battery.

(4) Assault helicopter and assault helicopter support battalions of the airmobile division.

d. Other Type Organization. Still other division units are authorized neither communications platoons nor sections by TOE. Most of these units, however, have designated communications specialists to perform essential functions; for example, the medical battalion, supply and transport battalion, and maintenance battalion. A minority of division units are not assigned any communication specialists. In these instances, required internal communication functions are performed by designated personnel in addition to other duties. Typical of these latter units are the transportation motor transport company, medical company, and administration company.

Section II. SIGNAL COMMUNICATION PERSONNEL

2-3. Basic Considerations

a. Each subordinate unit in the division has personnel whose primary duties are to install, operate, and maintain communication equipments. Other personnel concerned with communications include commanders and their

staffs, those who operate signal equipment for which no communication personnel are provided (such as tank crews), and others who are designated and trained to assist or take the place of communication personnel. For details on communication personnel authorizations, refer to appropriate TOE.

b. Communication personnel are organized into teams for installing, operating, and maintaining communication equipments. Considerations that influence the number of teams formed and their organization include the task to be performed and the availability of personnel, equipment, transportation, and requirements for future tasks. Communication teamwork demands a flexible team organization; ideally, personnel should be trained in more than one specialty to facilitate the formation of teams and to increase team proficiency.

c. This section summarizes the duties of selected key division personnel who perform signal communication duties. Greater detail is given in appropriate field manuals covering the unit to which such personnel are assigned.

2–4. Division Signal Officer

The division signal officer (DSO) serves on the division special staff and advises the division commander on matters pertaining to communications. In addition to his staff capacity, the DSO commands the division signal battalion and is responsible for the installation, operation, and maintenance of the division communication system. The DSO, therefore, exercises the duel functions of staff and command. These two functions, although vested in a single person are separate and distinct in that each involves different responsibilities and duties, and the exercise of one should not be confused with the exercise of the other. (See FM 101–5.) Staff relations of the DSO include the following:

a. General. As a member of the division commander's special staff, the DSO is included in all staff planning to present communication aspects for proposed tactical operations.

b. Coordination. The duties and responsibilities of the DSO involve both the general and the special staff. As a staff officer, the DSO normally will deal directly with staff sections on communication matters affecting areas of mutual interest; as a major subordinate commander, the DSO normally will have free access to the chief of staff.

c. Functions. The broad functions of the DSO can be listed under the categories listed below:

(1) Command.
(2) Advisory.
(3) Plans and orders.
(4) Technical supervision.
(5) Liaison.
(6) Training.

2–5. Other Key Officers of the Division Signal Battalion

Other key officers of the division signal battalion who assist the DSO/Signal Battalion Commander include the assistant division signal officer (ADSO), battalion executive officer, battalion S3, radio officer, wire officer, and cryptographic officer. Specific functions of these personnel are detailed in FM 11–50.

2–6. Unit Signal or Communication Officers

Unit signal or communication officers normally perform duties (within their units) that are similar to the duties performed by the DSO at the division headquarters level. Typical duties include—

a. Advising the commander and staff on communications matters and making plans and recommendations for establishing the communication system.

b. Supervising the installation, operation, and maintenance of the communication system from his unit to organic, attached, and supporting units.

c. Coordinating with the supporting elements of the signal battalion and the division signal officer for communication with higher and adjacent units.

d. Preparing plans for the displacement or extension of the existing communication system.

e. Submitting recommendations relative to the procurement and replacement of communication personnel.

f. Supervising the organizational maintenance and repair of signal equipment.

g. Supervising the maintenance of communication security, including the employment of codes, ciphers, and authentication systems.

h. Normally serves as cryptocustodian for the organization cryptographic account.

i. Submitting recommendations for paragraph 5 of operation orders, including initial and subsequent command post locations.

j. Assisting in the preparation of training directives pertaining to communications, and supervising the technical training of all communication personnel and others designated by the commander.

k. Determining the requirements for signal equipment and supplies, and collaborating with the supply officer in their procurement and distribution.

l. Obtaining current signal operation instructions and standing signal instructions from higher headquarters, and preparing extracts of these instructions for use in his unit.

m. Preparing for the commander's approval the orders and standing operating procedures needed to insure tactical and technical control of the communication system.

n. Assisting in selecting the exact location for the command post and selecting locations for communications installations within the command post.

o. Commanding, when so designated by TOE, the communications platoon or section.

p. Coordinating with unit S2 on all intelligence matters of mutual interest and also reporting through appropriate channels on all matters that relate to signal technical intelligence.

2–7. Communications Chief

Normally, the communications chief is the principal enlisted assistant to the unit signal or communications officer. If the unit, such as a company, has no designated signal or communications officer, the enlisted communications chief will act as the principal supervisor of communications for his unit. Typical duty actions of a communications chief are listed below:

a. Takes charge of the installation of all communications means established by his unit and supervises their operation and maintenance.

b. Assists in the conduct of instruction and training of the communications platoon or section.

c. Keeps informed on all communication aspects of tactical operations.

d. When appropriate, performs duties of assistant communications officer.

e. Coordinates all communications within the command post.

f. Supervises communication center operations.

g. Supervises and coordinates, under the direction of the unit signal or communication officer, where appropriate, the organizational maintenance of signal equipment within the unit.

h. Assists in the development, coordination, and establishment of unit communication SOP.

2–8. Duties of Other Enlisted Specialists

Listed below are typical duties of selected enlisted communications specialists.

a. Senior Message Clerk.

(1) Establishes and supervises the operation of the communication center (at battalion and brigade headquarters only).

(2) Maintains communication center records.

(3) Trains and supervises message clerks and messengers.

(4) Assists organization cryptocustodian in operation of crypto account.

b. Wire Section Chief.

(1) Reconnoiters wire routes.

(2) Assists in planning wire systems.

(3) Supervises the installation, operation, and maintenance of all wire lines installed by the wire section.

(4) Trains wire section personnel.

(5) Supervises and coordinates organizational maintenance of wire equipment in the unit.

c. Wire Team Chief.

(1) Alters planned wire routes as re-

quired to facilitate installation and reports changes to the wire chief.

(2) Assists in the preparation of line route maps.

(3) Installs and maintains wire lines.

(4) Trains wiremen.

d. Senior Switchboard Operation.

(1) Supervises operations of switchboard.

(2) Assists in the preparation of local telephone directories and telephone traffic diagrams.

(3) Trains telephone and switchboard operators.

e. Radio Section Chief.

(1) Recommends the location of radio and panel sites.

(2) Organizes the radio system at the command post.

(3) Trains members of the radio section.

(4) Reports to communications center any change in the status of radio communication.

(5) Supervises and coordinates organizational maintenance of radio equipment in the unit.

(6) Supervises the training and operations of the radio operators assigned to staff sections.

2–9. Assignment of Communications Personnel

a. In some units, radio operators, radio mechanics, and radio teletypewriter operators are assigned to sections other than the communications platoon; other units, such as the maintenance or medical battalions, have no organic communications platoons but do require some trained communications personnel. If the unit has an organic communications platoon, the responsibility for the conduct of training and operations remains with the communications officer even though certain communications personnel operate with their own sections; if the unit has no organic communications platoon, a designated communications chief may supervise training and communication operations. In all instances, the individual charged with communication training must be sufficiently aggressive to insure that all communication personnel, including those assigned to staff sections, receive sufficient training to maintain and improve their proficiency.

b. Radio mechanics assigned to the maintenance section of company-size units will work under the administrative supervision of the section chief and under the technical supervision of the company communications chief.

CHAPTER 3

ELECTRONIC WARFARE AND DIVISION AS A SUPPORT ELEMENT

Section I. ELECTRONIC WARFARE

3–1. Vulnerability of Communications-Electronics Systems

The use of tactical communication and other electronic devices by the U.S. Army and all potential and real enemy forces has grown to the point where all military actions are dependent on such devices. Since these equipments are vulnerable to a wide variety of disruptive efforts, today's "arts of war" must include all deliberate actions used to degrade or disrupt effective employment of enemy communications-electronics (CE) systems; similarly, U.S. Army forces must take necessary safeguarding actions to insure the effectiveness of their own CE systems when jammed or otherwise impeded by the enemy. The foregoing considerations emphasize the essential value of electronic warfare which is summarized in paragraph 3–2.

3–2. Scope of Electronic Warfare

a. Definition. Electronic warfare (EW) is defined as "that division of the military use of electronics involving actions taken to prevent or reduce an enemy's effective use of radiated electromagnetic energy, and actions taken to insure our own effective use of radio electromagnetic energy" (AR 320–5).

b. Electronic Countermeasures and Electronic Counter-Countermeasures. Electronic warfare consists of the fields of electronic countermeasures (ECM) and electronic counter-countermeasures (ECCM). For example, it must be assured that/the enemy fully realizes the importance of field radio in any given tactical operation; accordingly, he will employ powerful radio transmitters to override the radio communication of the opposing U.S. Army force. In this situation, radio communications is the measure, enemy radio interference is the electronic countermeasure. The operator of a field radio set being jammed by the enemy may adjust his receiver to operate through the jamming, or he may change frequencies to avoid the jamming—these actions constitute electronic counter-countermeasures. Required also for total understanding of the components of EW is some knowledge of communication intelligence (COMINT) and communication security (COMSEC).

c. Communications Intelligence. Communications intelligence is the "technical and intelligence information derived from foreign communications by other than the intended recipients" (AR 320–5).

d. Communications Security. The action taken by the U.S. Army to counteract enemy communication intelligence efforts is communications security (COMSEC). COMSEC is of vital importance to division operations at all unit levels; effective COMSEC limits the amount of intelligence and technical data that the enemy will be able to derive through COMINT in support of his ECM operations. For this reason, personnel involved with communications, whether on a primary duty or an occasional basis, must be thoroughly indoctrinated and trained in approved COMSEC and ECCM procedures. Refer to paragraphs 3–3 and 3–4 for additional information on communication security.

3–3. Communications Security and Telecommunications

a. Communications security is the protection resulting from all measures designed to

deny unauthorized persons information of value which might be derived from the possession and study of telecommunications or to mislead unauthorized persons in their interpretation of the results of such a study.

b. Telecommunications is any transmission or reception of signs, signals, writing, images, and sounds or any information of any nature by wire, radio, visual, or other electromagnetic systems.

c. Communications security (COMSEC) includes cryptosecurity, transmission security, and physical security of communications security materials, equipment, and information.

3–4. Application of Communications Security

a. The basic objective of communications security is the effective and efficient application of security to communications. The requirement for communications security must be considered during the planning stage for any type of operation. Security measures for the protection of military information, equipment, and materiel include defense against capture, observation, photography, salvage, theft, interception, direction finding, traffic analysis, imitative deception, and personal carelessness and laxity.

b. The commander is responsible for communications security. He accomplishes this by stating general principles in the unit SOP and by stating and announcing variation from these normal security practices before each operation.

c. The unit G2 and S2 has primary staff responsibility for communications security. The G2 or S2 is assisted by elements of the attached military intelligence detachment and the U.S. Army Security Agency.

d. The G3 or S3 has primary staff responsibility for active electronic countermeasures.

e. A more complete discussion of communications security is contained in FM 32–5. Some means of providing communications security are listed in paragraph 3–5.

3–5. Providing Communications Security

A list of practices that will provide the elements of communications security is shown below:

a. Cryptosecurity.

(1) Use only authorized cryptosystems and equipment.

(2) Use authorized cryptosystems only as prescribed by the operating instructions.

(3) Encrypt information requiring long term security only in those cryptosystems providing long term security.

(4) Use only personnel who are authorized access to cryptosystems.

(5) Promptly report all cryptosecurity violations.

b. Transmission Security.

(1) Use radio only when other means of communications are not practical.

(2) Restrict plain language transmissions to a minimum.

(3) Maintain circuit discipline.

(4) Assign call-signs/words and frequencies simultaneously.

(5) Change call-signs/words and frequencies simultaneously.

(6) Keep transmissions brief.

(7) Authenticate.

(8) Use broadcast and intercept transmission methods.

(9) Use only prescribed communications operating procedures.

(10) Do not mix code and clear text.

c. Physical Security.

(1) Maintain adequate emergency and destruction plans and practice them frequently.

(2) Properly safeguard and control communications security materials at all times.

(3) Promptly report all physical security violations.

3–6. COMSEC Supports ECM

Communications security practices are effective in limiting the amount of information that the enemy can acquire to conduct ECM operations. The enemy may use ECM even if his ECM operations are not supported with sufficient technical information. COMSEC plays an important role in such situations because the enemy will utilize his COMINT capability to measure the effectiveness of his ECM operations. As the enemy jams radio communications, he concurrently uses his

COMINT facilities to determine the reaction of radio operators being jammed. It is imperative that these radio operators do not reveal that they are being jammed. The enemy will find it extremely difficult to determine his jamming effectiveness if U.S. Army operators maintain a pattern of normal and unhampered operation.

Section II. UNITED STATES ARMY SECURITY AGENCY DIVISION SUPPORT ELEMENT

3–7. General

Each armored, infantry, mechanized, airborne, and airmobile division is assigned a United States Army Security Agency (USASA) division support element. The USASA division support element will provide services as prescribed in AR 10–122. For further information also refer to FM 101–10–1 and FM 32–20.

3–8. Communications

Normally, the USASA division support element will be provided adequate circuits within the division area to higher USASA headquarters, and to the tactical operations center of the supported division.

CHAPTER 4

TACTICAL AIR REQUEST AND TACTICAL AIR DIRECTION COMMUNICATIONS IN THE DIVISION

4–1. Application

Material presented in this chapter applies to the armored, infantry, mechanized, and airborne divisions. It does not currently apply to the airmobile division without significant modification; particular coverage of the airmobile division will be made in part III.

4–2. Preplanned Air Requests

a. Preplanned air requests originating within the division follow the chain of command (fig. 4–1). For example, a preplanned air request from the company level will require successive approvals from the battalion, brigade, and division levels. After approval at division headquarters (TASE DTOC), the request will be evaluated, assigned a priority, and consolidated before submission to the next higher headquarters. Normally, the field army TOC takes final action all preplanned requests and submits approved requests to the USAF tactical air control center as requirements for execution. During this process, USAF TACPS provide advice and assistance to the army command level where located.

b. Within the division, the division air request radio net will be used to forward preplanned air requests. From division to higher headquarters, the army air request net (or higher echelon air request net) will be employed to forward the consolidated division preplanned air requests. Refer to figure 4–3.

c. In the armored, infantry, and mechanized divisions, the air support signal team, division signal battalion, will provide the division radio stations in the division air request and Army air request radio nets. Normally, these stations are remoted into the TASE DTOC. (In the airborne division, the air support signal team is not currently authorized a radio set to operate in the army air request net—augmentation of radio resources will be required.) At brigade and battalion in all type divisions, radio sets assigned for use of S3 air will provide the communications required for preplanned air requests.

4–3. Immediate Air Requests

a. Immediate air requests from subordinate elements normally reach maneuver battalion or squadron level through standard radio or wire networks organic to the particular battalion or squadron. At this level, requests are validated by the commander or his representative and passed to the tactical air control party (TACP). The request then is transmitted over the Air Force air request net. As an interim measure, each brigade headquarters, each maneuver battalion, and the cavalry squadron have an organic air control team (ACT) to provide a station in the Air Force air request net for the submission of immediate air requests—currently USAF TACP will use the facilities of these ACTs (*c* below). At the division headquarters, the division signal battalion (air support signal team) provides the division communications facilities. Refer to figures 4–2 and 4–3.

b. Immediate air requests are transmitted directly from battalion or squadron level to the DASC normally located at the corps tactical operations center (CTOC). Intermediate headquarters, brigade and division, will monitor and acknowledge all requests, indicating disapproval only when desired. Silence after acknowledging the request normally signifies approval—if the commander desires that a specific approval be transmitted, it should be so stated in the unit SOP.

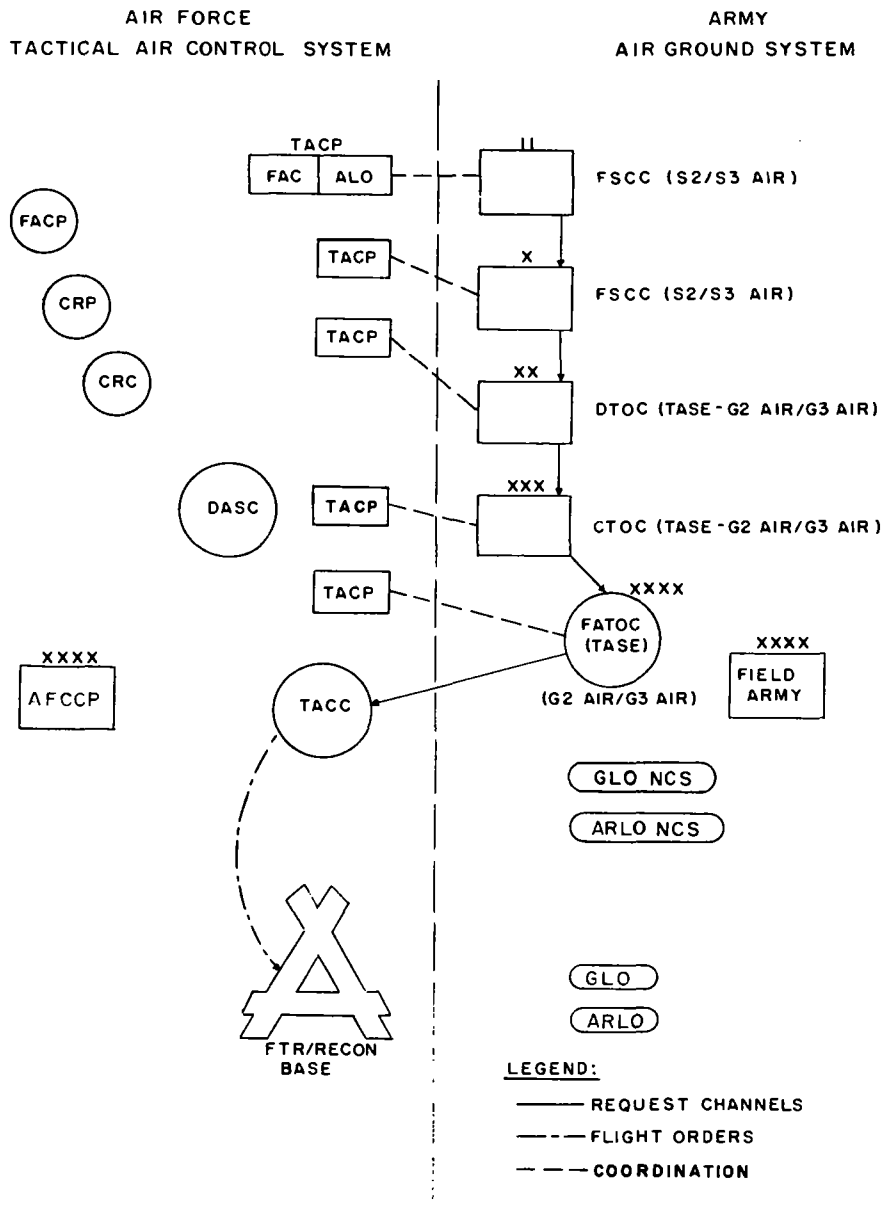


Figure 4–1. Type flow for preplanned air requests.

c. In accordance with AR 525–25 service responsibility for all TACPs has been given to the USAF. As equipment and personnel become available, the USAF will provide fully equipped TACPs to replace all army ACTs at battalion/squadron and brigade levels; at division level, the immediate air request and tactical air direction functions of the air support signal team also will be eventually taken over by a TACP. The Air Force air request net will then be extended to include these levels, and the USAF, except in some specialized cases, will provide both the personnel and equipment required for immediate air request and tactical air direction communications. It is reemphasized, however, that as an interim

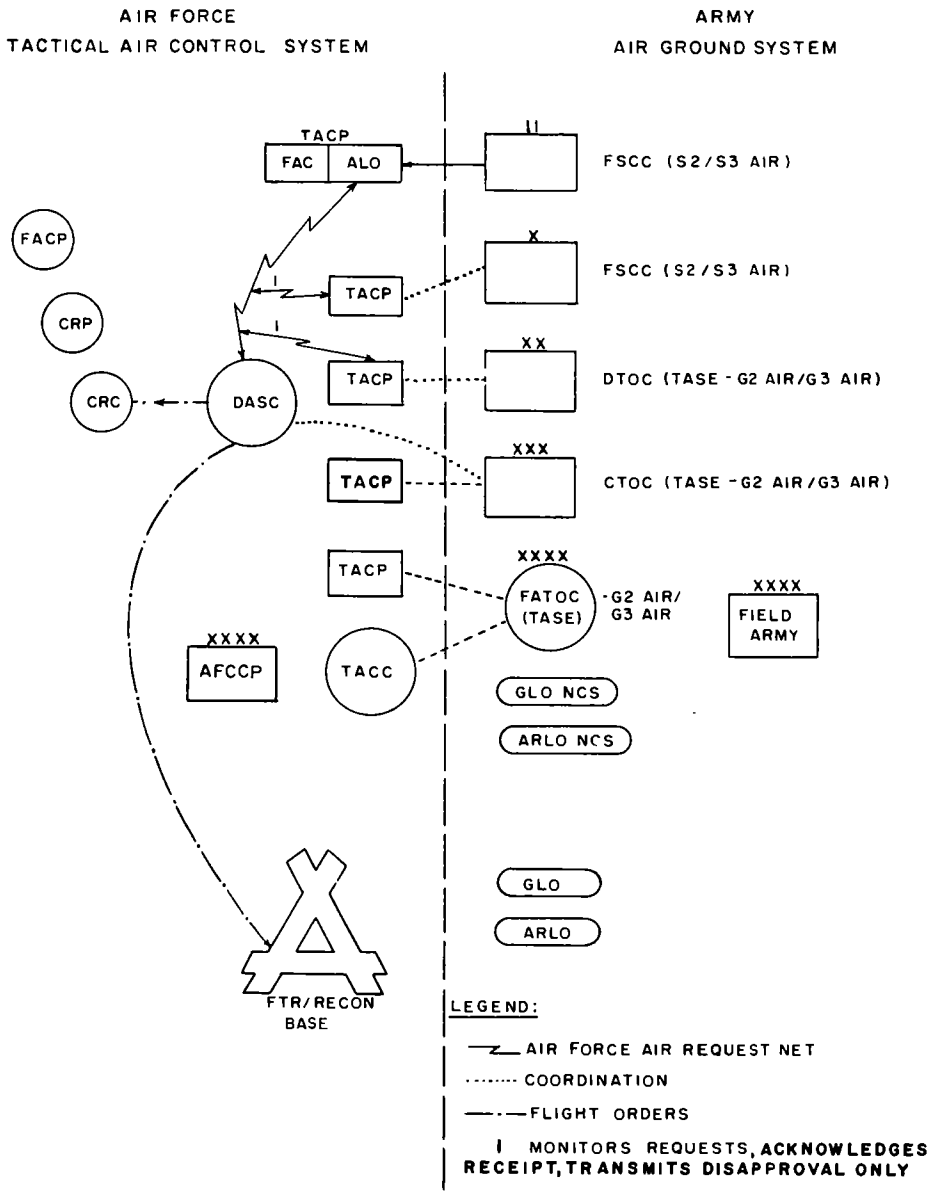


Figure 4–2. Type flow for immediate air requests.

measure army radio equipments will continue to be available for immediate air requests and tactical air direction—equipments for this purpose are currently carried on Army TOE.

d. In some situations, requests for immediate air support may be forwarded direct from company level to DASC. This necessitates that a forward air controller or a TACP be present with the company—the requests otherwise follow the channels and procedures already described.

e. In all situations, the supported ground commander or his representative approves or disapproves all immediate air requests. Members of the air element, usually a TACP pro-

AIR REQUEST RADIO NETS FOR THE DIVISION			
PREPLANNED AIR REQUESTS			IMMEDIATE AIR REQUESTS
NET / STATION	ARMY AIR REQUEST NET (RATT)	(NOTE 1) DIVISION AIR REQUEST NET (AM, SSB, VOICE)	(NOTE 2) AIR FORCE AIR REQUEST NET (AM, SSB, VOICE)
ARMY MAIN	X		
ARMY ALTN	X		
CORPS MAIN	X		A (DASC)
CORPS ALTN	(X)		
DIV MAIN	X	X	X (TACP)
DIV ALTN	(X)	(X)	(X)
BDE		X	X (TACP)
MANEUVER BN		X	X (TACP)
CAV SQDN		X	X (TACP)

NOTES:

1. EACH STATION IN DIVISION AIR REQUEST NET IS ALSO EQUIPPED WITH AM UHF RADIO IN SPOT REPORT RECEIVING SYSTEM, AM MONITORING RECEIVER IN DIVISION WARNING BROADCAST NET, AND FM RADIO SET IN ITS UNIT COMMAND NET.
2. EACH TACP IN AIR FORCE AIR REQUEST NET HAS AM UHF RADIO SET IN AIR FORCE TACTICAL AIR DIRECTION NET AND FM RADIO SET IN COMMAND NET OF UNIT IT SUPPORTS.

LEGEND:

X - ARMY RADIO SET

A - AIR FORCE RADIO SET

(X) - RADIO SET AT MAIN MUST BE MOVED TO ALTERNATE LOCATION

Figure 4–3. Type radio nets for preplanned and immediate air requests in the division.

viding the close air support, act in an advisory capacity only.

f. In airborne, airmobile, and independent division operations, an airborne DASC may be employed for air support.

4–4. Air Force Tactical Air Direction Net (fig. 4–4)

The Air Force tactical air direction net is used by the TACPs and DASC to direct aircraft flying tactical air support missions. Present Army TOE provide UHF radio sets to operate in this net. Eventually, however, these radio sets will be USAF provided at appropriate army levels (para 4–3*c*).

4–5. Spot Report Receiver Net

The spot report receiver net is used for the transmission of in-flight reports from tactical aircraft to division monitoring stations at

NET / STATION	AIR FORCE TAC AIR DIR NET (UHF)	SPOT REPT RCVR NET (UHF)	DIV CG COMD NET (FM)	BDE COMD NET (FM)	BN COMD NET (FM)	SQDN COMD NET (FM)
CORPS	A (DASC)	A (DASC)				
DIV MAIN	X (TACP)	X (G3/G2 AIR)	X (TACP)			
DIV ALTN	(X) (TACP)	(X)	(X)			
BDE	X (TACP)	X (S3/S2 AIR)		X (TACP)		
MANEUVER BN	X (TACP)	X (S3/S2 AIR)			X (TACP)	
CAV SQDN	X (TACP)	X (S3/S2 AIR)				X (TACP)

LEGEND:

X — ARMY RADIO SET
A — AF RADIO SET
(X) — RADIO SET AT MAIN MUST BE MOVED TO ALTERNATE LOCATION

Figure 4-4. Type Air Force tactical air direction and related army radio nets in the division.

division G3/G2 Air or S3/S2 Air of brigade or battalion.

4–6. Land Force Net
(fig. 4–4)

Each TACP is provided with FM equipment to maintain a station in the land force commander's voice FM radio net as required. In the army division, this includes the division command net (FM), brigade command net (FM), and the battalion command net (FM).

4–7. Multichannel Communications for Preplanned Air Support

Wherever possible, existing division multichannel communications facilities should be utilized in transmitting requests for preplanned air support. Such a procedure will enhance communication reliability and relegate the preplanned air request radio nets to a more appropriate backup role.

PART ONE

COMMUNICATIONS IN ARMORED, INFANTRY, AND INFANTRY (MECHANIZED) DIVISIONS

CHAPTER 5

COMMUNICATIONS OF HEADQUARTERS AND HEADQUARTERS COMPANY OF ARMORED, INFANTRY, AND MECHANIZED DIVISIONS

5–1. Mission

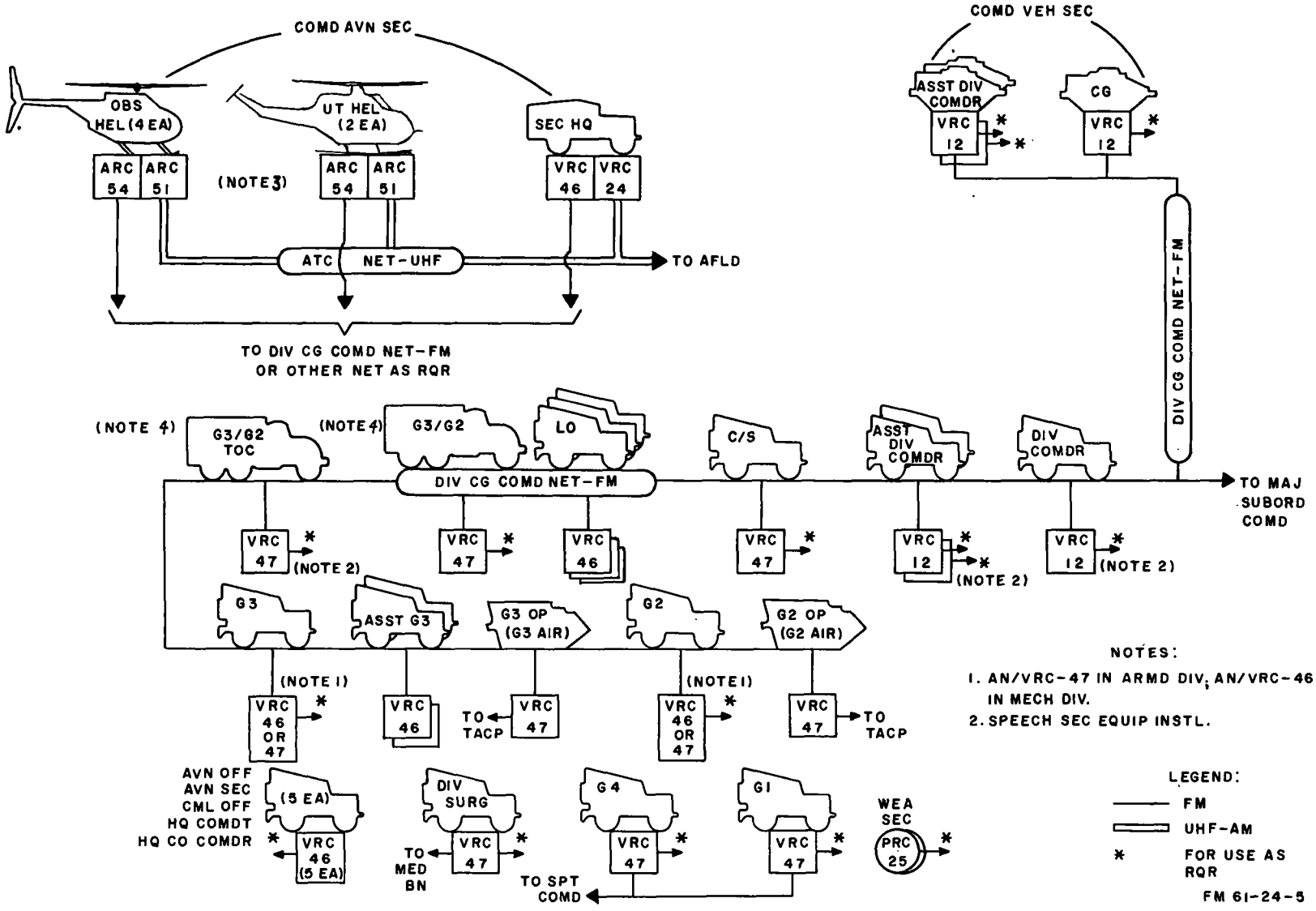
The division headquarters provides command, control, and supervision of operations and administration of the division and attached units. The headquarters company provides logistical support and the personnel for division headquarters. A more detailed discussion of the mission of headquarters company is contained in FM 61–100.

5–2. Communications Provided by Company

a. The division headquarters and headquarters company provides the vehicular radio sets for staff control and internal company use. The more extensive communication service for all division command post echelons is provided through the facilities of the division signal battalion (ch 6).

b. A type employment of the internal radio sets of type division headquarters and headquarters companies is shown in figures 5–1 and 5–2.

c. A weather section is included in the division headquarters and headquarters company when specifically authorized by the Department of Army. The army element of this section provides two FM radio sets for dismounted operation, a teletypewriter set, a telephone, and two light truck drivers with trucks; the Air Force provides a staff (division) weather officer with five enlisted assistants and meteorological peculiar equipment. Normally, the weather section is provided adequate circuits for communication from division headquarters to its counterpart facility at corps over corps-provided circuits. Refer to AR 115–10 for further explanation of meteorological support for the U.S. Army.



NOTES: (CON'T)

3. EACH AIRCRAFT CONTAINS AN/URC 10
4. EXPANSIBLE VAN

Figure 5-1. Type employment of radio sets, headquarters and headquarters company, armored or mechanized division.

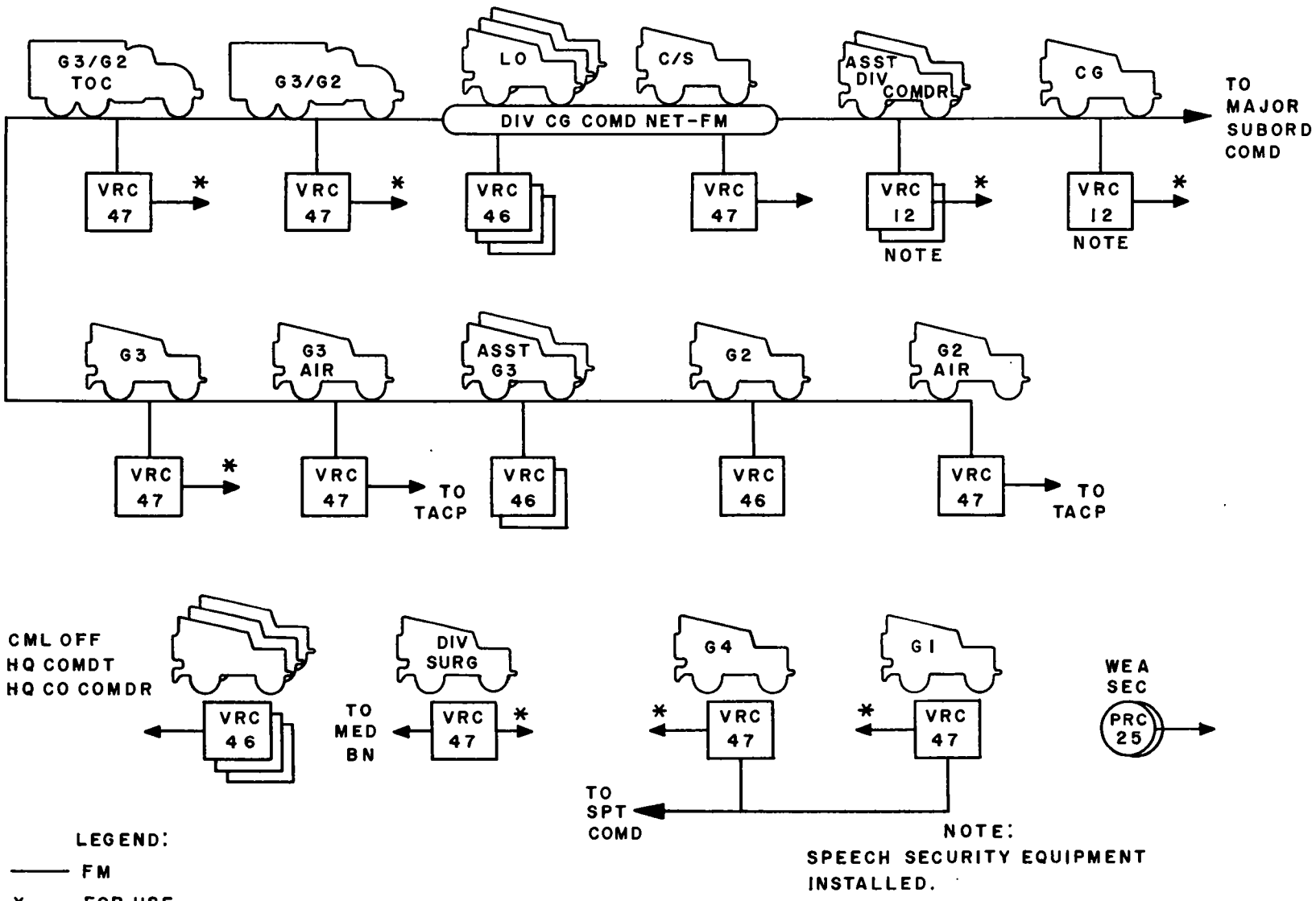


Figure 5–2. Type employment of radio sets, headquarters and headquarters company, infantry division.

CHAPTER 6
COMMUNICATIONS AT DIVISION LEVEL
(ARMORED, INFANTRY, AND MECHANIZED DIVISIONS)

Section I. SIGNAL BATTALION

6–1. General
(fig. 6–1)

a. A division signal battalion is organic to each armored, infantry, or mechanized division. The battalion is part of the combined arms team and provides communications support for the division.

b. Each battalion consists of a headquarters and headquarters detachment, a command operations company, a forward communications company, and a signal support operations company. It is common practice to designate the operating companies of the battalion as company A (command operations), company B (forward communications), and company C (signal support operations).

c. This chapter presents summary information on the organization and operation of the division signal battalion. For more extensive detail, refer to FM 11–50 and TOE 11–35.

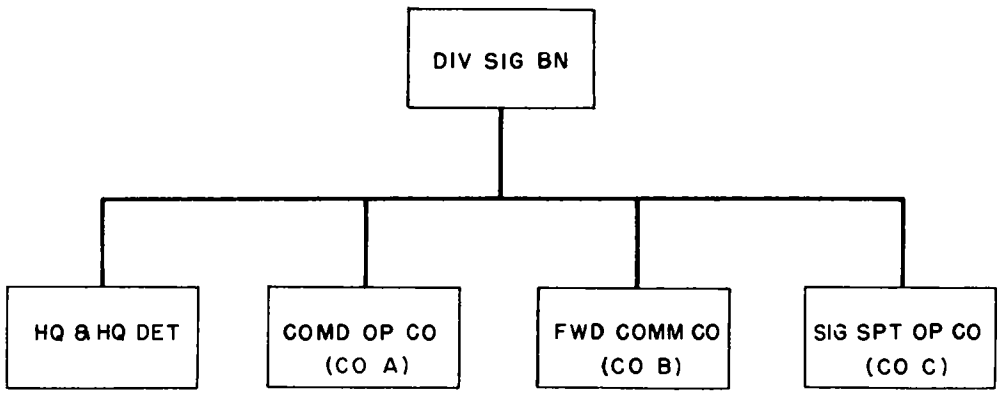


Figure 6–1. Armored, infantry, or mechanized division signal battalion.

6–2. Battalion Mission and Capability
The overall mission and capability of the division signal battalion (TOE 11–35) are summarized below:

a. Mission. The battalion has the mission to—

(1) Install, operate, and maintain a division communication system for support of division-level functions including command and control, intelligence, firepower, and combat service support.

(2) Provide special staff and technical assistance for planning and control of all division communications by the division command and staff.

(3) Provide photographic service for the

division—this excludes development of motion picture and color film.

(4) Provide cryptologistic support for the division.

(5) Provide internal command post (CP) communications at all echelons of division headquarters including division support command and division rear echelon.

b. Capability. Consistent with its mission requirements, the battalion has the capability to provide the following:

(1) Command multichannel telephone and teletypewriter circuits from echelons of division headquarters to division artillery, support command, three brigades, aviation battalion (infantry division only), and other major subordinate units as directed.

(2) Internal communication facilities for the various command posts operated by division headquarters.

(3) Area multichannel telephone and teletypewriter circuits among echelons of division headquarters, support command, and three area signal centers—the area coverage thus provided affords alternate command links and the primary communication links for division combat service support functions.

(4) Internal communication facilities for the support command post and three forward area signal centers.

(5) Field wire and/or cable circuits from support command to its major subordinate units, between forward area signal centers, from forward area signal centers to separate combat organizations and combat service support installations—such service is extended within the capabilities of the component companies of the battalion as directed.

(6) Radio teletypewriter (RATT) and voice radio terminals at division command echelons, support command command post, and three forward area signal centers—the stations provided operate in designated division radio nets.

(7) Division motor messenger service to major subordinate commands.

(8) Ground still and motion picture photography for the division and operation of a mobile photography laboratory—aerial photography and the processing of motion picture and color film are excluded.

(9) Direct cryptologistic support of the division.

(10) Radio wire integration stations at all echelons of division headquarters (except division rear) the division support command, and at three forward area signal centers.

6–3. Headquarters and Headquarters Detachment

(fig. 6–2)

The headquarters and headquarters detachment (TOE 11–36) has the mission and capability to—

a. Plan, direct, and coordinate the operations and training of a division signal battalion.

b. Provide the necessary command, control, and administrative/logistical support for the signal battalion.

c. Provide the signal special staff capability for the division.

6–4. Command Operations Company

(fig. 6–3)

a. Mission. The mission of the command operations company (TOE 11–37) is to provide—

(1) Internal signal communication facilities for the various division command echelons; for example, division main, alternate, and tactical command posts.

(2) Multichannel radio terminals at the command echelons of division headquarters.

(3) Multichannel radio terminals at the division artillery headquarters command post.

(4) Signal center service for units located in the vicinity of the division command echelons—this service is supplementary to the organic facilities of units being supported.

(5) Direct support maintenance of cryptographic equipment organic to the company —this service is also extended to units located in the vicinity of division command echelons.

b. Capability. Consistent with its mission requirements, the command operations company has the capability to provide the following:

(1) Communication center facilities with

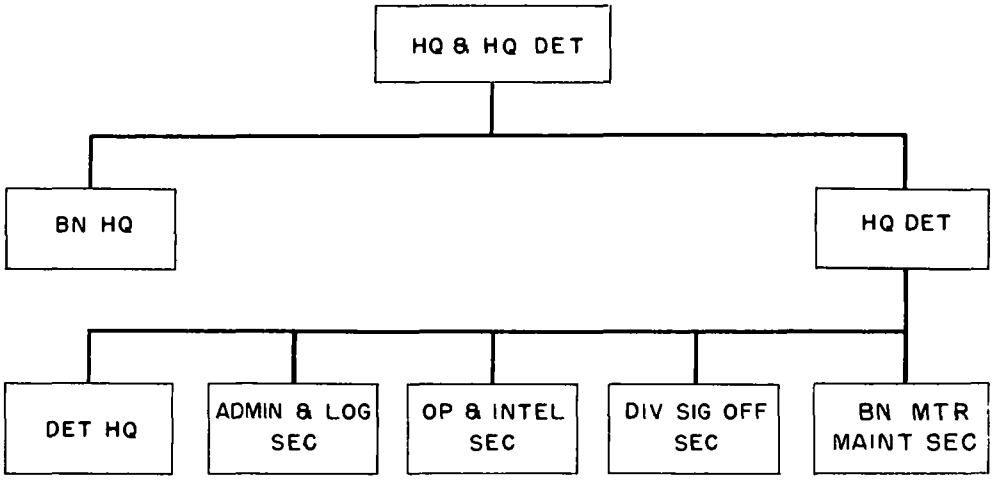


Figure 6–2. Headquarters and headquarters detachment, division signal battalion, armored, infantry, or mechanized division.

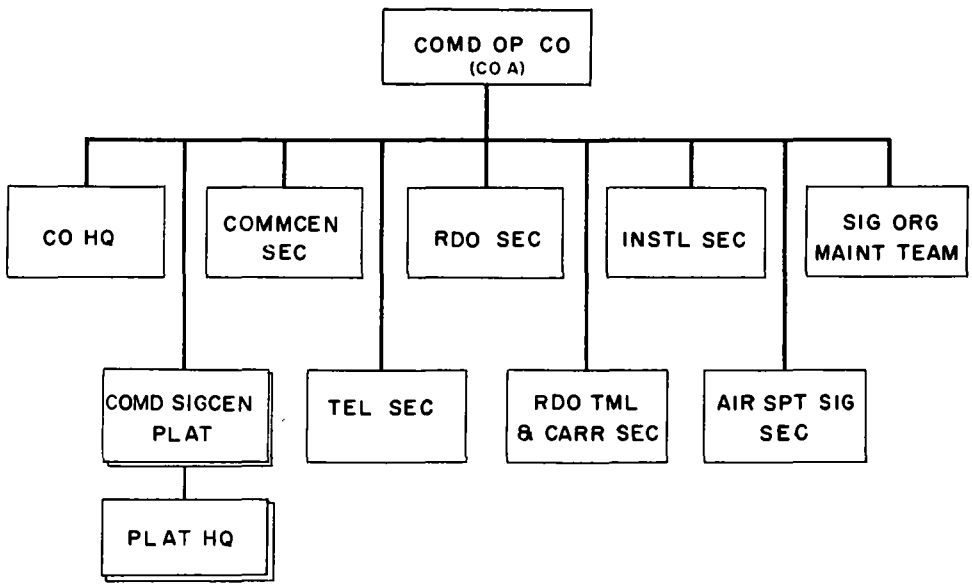


Figure 6–3. Command operations company, division signal battalion, armored, infantry, or mechanized division.

secure teletypewriter and messenger service for the various division headquarters command echelons.

(2) Three 120-line manual telephone central office sets for terminating trunk and local telephone subscriber circuits for the command echelons of division headquarters.

(3) Facsimile service at one communication center, usually division main.

(4) Two radio wire integration (RWI) stations to establish telephone communications from mobile FM radio stations to telephone switching facilities.

(5) Ten multichannel radio terminals for use as required at the command echelons of the division and at the division artillery headquarters.

(6) Seven mobile secure radio teletypewriter (RATT) stations, two single side-band (SSB) CW/voice radio stations, and two FM/voice radio stations equipped with speech security equipment—these stations are for operation in army, corps, and division radio nets as well as in the division warning broadcast system; additionally there are four FM vehicular sets for internal battalion use supplemented by five portable FM radio sets for use as required.

(7) A tactical air support facility which includes a secure RATT station, two SSB CW/voice radio stations and two VHF–UHF radio stations for air-to-ground operations. This facility will also provide a vehicle and necessary communication equipment for an Air Force (AF) liaison officer where required (ch 4).

(8) Three wire and telephone installation teams to install local telephone circuits at the command echelons of the division.

(9) Direct support maintenance of organic cryptographic equipment to include support for units located in the vicinity of division command echelons.

(10) Unit administration, supply, and organizational maintenance of arms, vehicles, power generators. and communication equipment.

(11) Company mess facilities for 24-hour operation.

6–5. Forward Communications Company (fig. 6–4)

a. Mission. The mission of the forward communications (TOE 11–38) company is to provide—

(1) Communication facilities and termination of division communication system in the forward support areas of a division zone of operations. The service provided is supplementary to the organic facilities of the units being supported.

(2) Division multichannel radio terminals at brigade command echelons and at command echelons of other major subordinate units as directed.

(3) Direct support maintenance of cryptographic equipment organic to the company. This service is also extended to units located in the vicinity of company operations.

b. Capability. Consistent with its mission requirements, the forward communications company has the capability to provide the following:

(1) Three forward area signal centers, each of which can provide—

(*a*) A communication center with secure teletypewriter facilities and limited motor messenger service.

(*b*) A RATT station in a division radio net.

(*c*) A 60-line telephone switching central for supported units in a forward area.

(*d*) An RWI facility to connect mobile FM voice radio stations of the forward area to the division telephone network.

(*e*) Multichannel radio terminals to afford telephone and teletypewriter access from the forward areas to the division support command, division command echelons, and brigade command echelons.

(2) A command signal terminal section to terminate division multichannel radio command links at the headquarters echelons of three brigades. There is a possible allotment of three multichannel radio terminals or three teams per brigade headquarters.

(3) Unit administration, supply, and organizational maintenance of organic arms, vehicles, power generators, and signal communication equipment.

(4) Direct support maintenance of cryptographic equipment organic to the company and units located in the forward area of a division zone of operations.

(5) Company mess facilities for 24-hour operation.

6–6. Signal Support Operations Company (fig. 6–5)

a. Mission. The mission of the signal support operations company (TOE 11–39) is to provide—

(1) Signal communication facilities for a division support command headquarters and the rear echelon of a division headquarters.

(2) Signal center service to units located in the vicinity of a division support command headquarters and a division rear echelon.

(3) Field cable construction and multichannel radio terminals in support of other units of the division signal battalion.

(4) Photographic services for the division (see *b* below for limitations).

(5) Direct support maintenance of cryptographic equipment organic to units located in the vicinity of division support command.

b. Capability. Consistent with its mission, the signal support operations company has the capability to provide the following:

(1) A division support command operations platoon to provide—

(*a*) A communication center with secure teletypewriter terminal facilities for operation in the division system. Ground messenger service is not provided but is obtained from company A as required.

(*b*) Three RATT stations in division nets and three RATT stations to support subordinate units of support command as required.

(*c*) A 60-line telephone switching central to service support command headquarters and supported units in the area.

(*d*) An RWI facility to connect FM-voice radio stations of the area into the division telephone network.

(*e*) Division multichannel radio terminals to provide telephone and teletypewriter circuits from the division support command to division command echelons and the forward areas.

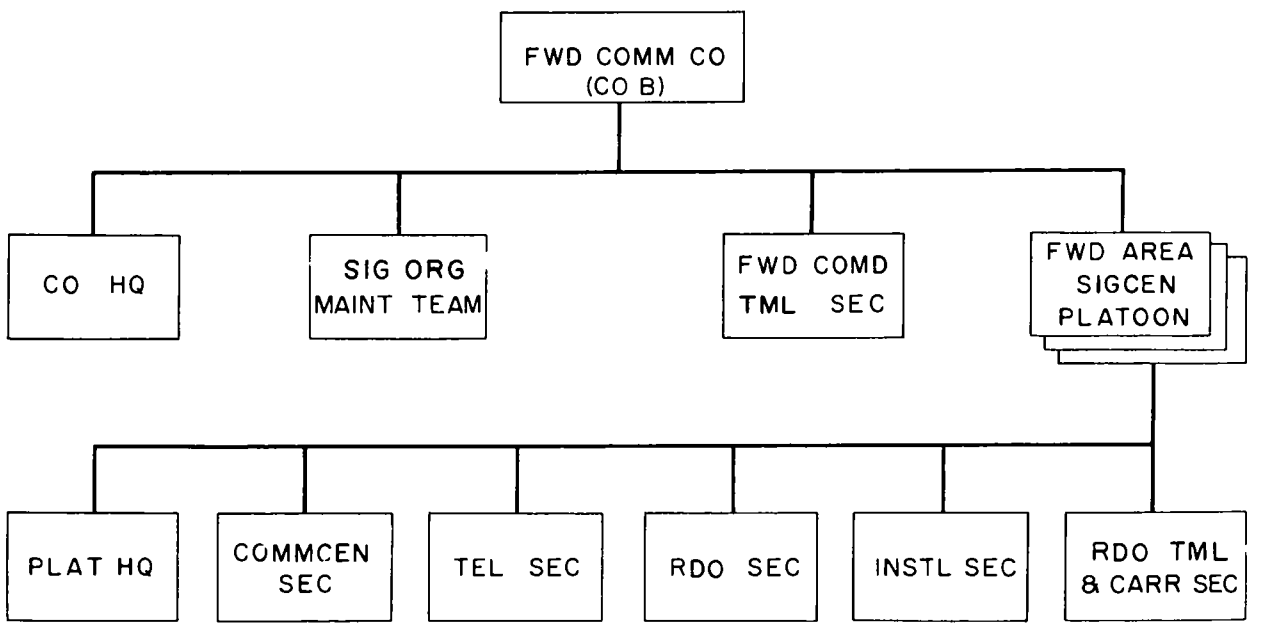


Figure 6–4. Forward communications company, division signal battalion, armored, infantry, or mechanized division.

(2) A division rear echelon operations platoon to provide—

(*a*) Limited communication center facilities with secure teletypewriter but no ground messenger service.

(*b*) A 60-line telephone switching central to service the division rear echelon and units in the immediate area.

(*c*) A RATT station in a division radio net.

(3) Ground still and motion picture photography for the division and operation of a mobile photographic laboratory facility. Excluded are aerial photography and the processing of exposed motion picture and color film.

(4) Installation, maintenance, and recovery of field cable circuits from division command echelons to major subordinate units, and from multichannel radio and teletypewriter terminals to command posts. All such cable service is on an as-directed basis.

(5) Division multichannel radio terminals and repeaters to augment the division communication system, as required.

(6) Unit administration, supply, and organizational maintenance of organic arms, vehicles, power generators, and signal equipment.

(7) Direct support maintenance of cryptographic equipment organic to the company and to units located in the vicinity of division support command headquarters and rear echelon areas.

(8) Company mess facilities on a 24-hour basis.

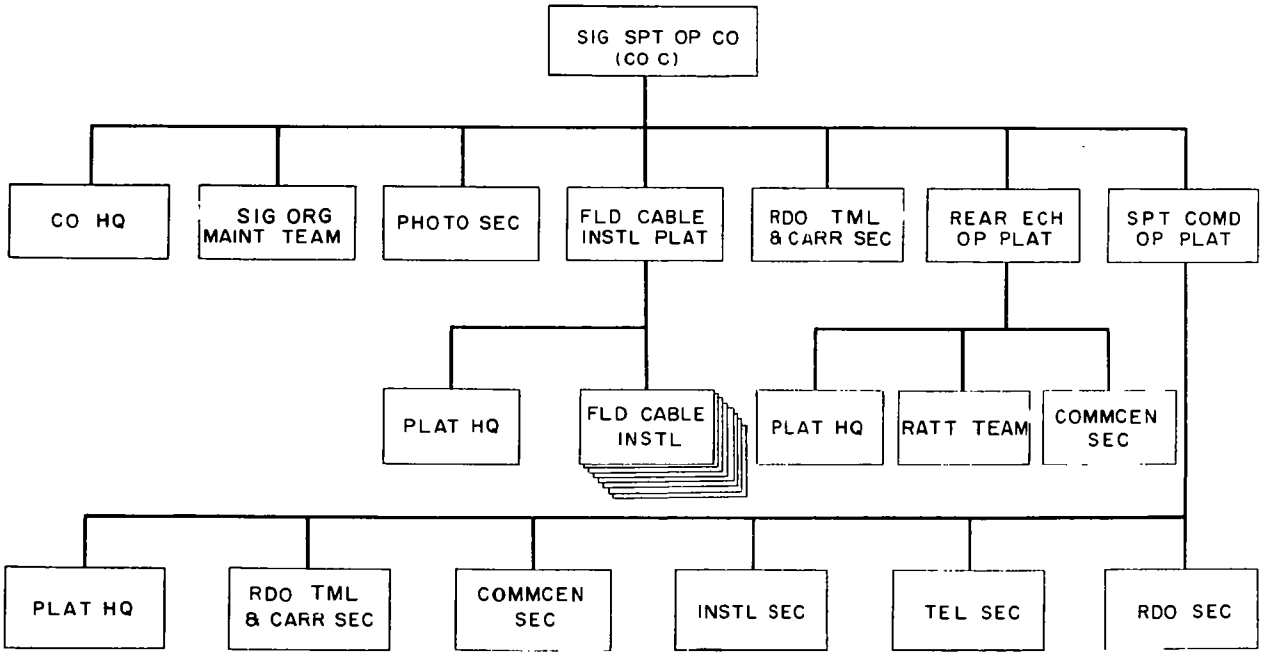


Figure 6–5. Signal support operations company division signal battalion, armored, infantry, or mechanized division.

Section II. DIVISION COMMUNICATION SYSTEM

6–7. Characteristics of the Division Communication System

The division communication system is designed to provide rapid and responsive communications required for command and control. The system must provide the following:

a. Communication service to widely dispersed units.

b. Flexibility to meet changes in division task organization and at the same time, to facilitate the relocation of units, command posts, and installations.

c. Patching facilities to permit electrical rerouting and physical relocation of circuits with a minimum of system changes.

d. Secure facilities for transmitting classified information.

e. Reliable and alternate means of communications.

f. Common-user circuits for installations and units which eliminate the need for extensive organic systems.

g. Sole-user circuits which must be specifically justified for high precedence requirements.

h. Integration with corps command and field army communication systems.

6–8. Responsibility

a. Each commander is responsible for his organic signal communications and for its efficient functioning as part of the higher unit communications system.

b. All commanders are mutually responsible to insure that signal communications are in operation at all times. This is accomplished by taking immediate action to keep organic communications operational or insuring that the commander responsible for providing communications is informed that a portion of a signal system is not operational.

c. The division signal officer has dual responsibilities as follows:

(1) As a member of the division special staff he is responsible for providing technical assistance and advice to insure that the entire division signal communications system is operational.

(2) As the commander of a division signal battalion, he is responsible that the system and nets operated by that battalion are operational at all times.

6–9. Composition

The division communication system as established, equipped, and operated by the signal battalion will normally consist of the following:

a. Signal centers at each echelon of division headquarters support command headquarters, and at three forward sites in the division zone.

b. Multichannel communication links to interconnect the division signal centers, division artillery headquarters, the headquarters of each brigade, and other major subordinate division units as required.

c. Division ground messenger service and air messenger service to link echelons of division headquarters with the major subordinate commands of the division. (Aircraft are provided by the aviation battalion in the infantry division, since there is no organic aviation battalion in the armored and mechanized divisions; aircraft for messenger service must be obtained from other sources.)

d. AM and FM radio nets.

e. Radio/wire integration stations at each signal center, except division rear, for interconnecting mobile FM radio stations to the telephone system at the signal centers.

6–10. Signal Centers

a. Signal Centers at Division Mainland Division Alternate. Signal centers at division main and division alternate are provided by the command signal center platoons of the command operations company. These signal centers also provide access to the division communication system for units located in the immediate vicinity; such support is supplementary to the organic capability of the unit being supported. Division SOP may require that certain elements composing these signal centers be further echeloned to make up a tactical division CP or a division displacement team.

b. Signal Centers in Forward Division Areas. The forward communication company installs and operates three signal centers in the forward area of the division. These centers are established at sites selected by the DSO after consultation with the division staff and are designed to provide signal support to both divisional and nondivisional units in the immediate area of operation. All signal support provided by these signal centers is in

addition to the organic capabilities of the unit or units being served.

c. Signal Center at Support Command Headquarters. The signal center at division support command headquarters is installed and operated by the support command operations platoon of the signal support operations company. This signal center provides facilities in addition to the organic facilities of units located in the vicinity of support command headquarters; over-the-counter messenger service only is provided.

d. Signal Center at Division Rear Echelon. The signal center at division rear echelon is provided by the rear echelon operations platoon of the signal support operations company. Services provided by this platoon are limited; for example, the center can operate in one echelon only and has neither organic messengers nor multichannel radio facilities.

6–11. Multichannel Network

The multichannel portion of the division communications system consists of multichannel radio, carrier, and cable facilities installed and operated by the signal battalion. Figure 6–6 illustrates a *type* configuration of these facilities. Final determination as to network composition is made by the DSO; his decisions are based on the desires of the division commander, the division SOP, the tactical situation, and the frequencies and equipments available.

a. Within the Division. The following is a summation of the responsibilities of the various companies of the signal battalion in providing multichannel radio terminals:

(1) *Command operations company.* This company provides terminals and operating personnel at division main, alternate, and at division artillery headquarters.

(2) *Forward communications company.* This company provides terminals and operating personnel at three forward area signal centers and at each brigade headquarters.

(3) *Signal support operations company.* This company provides terminals and operating personnel at division rear (if required) and at division support command headquarters. In addition, the company maintains a pool of repeater and terminal equipment for augmentation of the multichannel network as required.

b. To Corps and Army. Normally, the corps signal battalion installs and operates multichannel radio terminals at division main and alternate CPs for division interconnection into the corps communication system. Similarly, an army area signal battalion usually installs a multichannel radio terminal at division support command to operate in the army area communication system. If the division rear CP is located in the army area, a multichannel radio terminal may be provided by an army signal unit to connect this division echelon into the army area communication system. Normally, however, the division rear echelon can be connected by field wire circuits into the army area communication system.

c. Lateral Communications. Multichannel lateral communications between adjacent divisions or between a division and another major unit is established in consonance with current doctrine (FM 24–1) and existing command policies.

6–12. Command and Secondary Multichannel Links

a. Command Links. The command or priority multichannel radio links must be immediately established and continually maintained. These links are listed below in decreasing order of installation urgency:

(1) Division main and alternate to each brigade.

(2) Division main to division artillery headquarters.

(3) Division main and alternate to division support command.

(4) Division main to division alternate.

(5) Division main to division airfield.

(6) Division alternate to division artillery when not adjacently located.

b. Secondary Links. The secondary multichannel or area links complement the command links and offer wider area and alternate routing paths within the multichannel network. These area links provide the basic communications from the division support command to support elements in the brigade trains areas of the division. Typical secondary

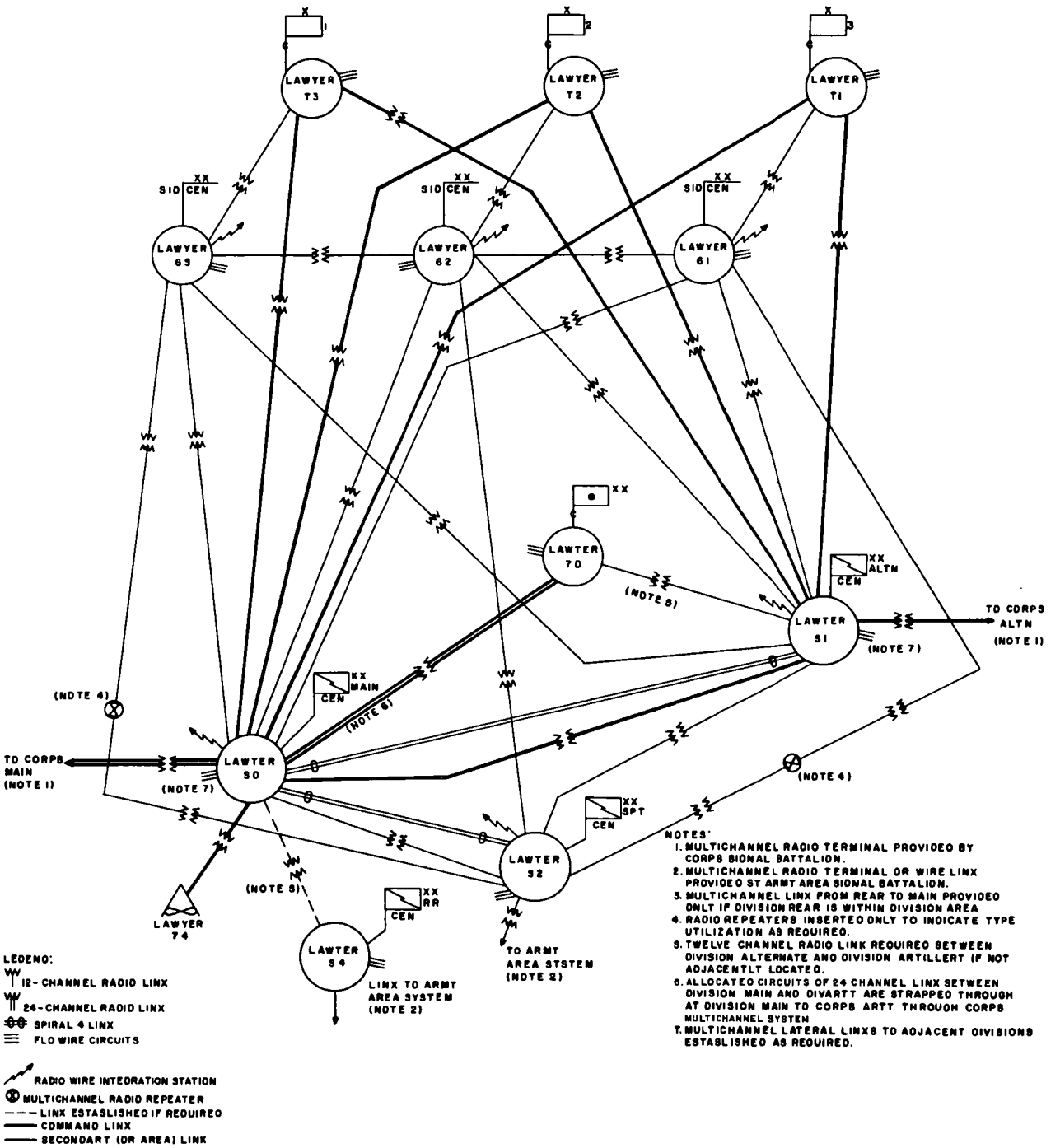


Figure 6–6. Type configuration of the multichannel portion of division communication system, armored, infantry, or mechanized division.

multichannel links are given below in descending order of priority.

(1) Area signal centers to division main, alternate, and support command CPs.

(2) Area signal center to brigade.

(3) Lateral links between area signal centers.

(4) Lateral links to adjacent division.

c. Utilization of Equipment. Type drawing figure 6–6, illustrates the maximum multichannel capability of the division signal battalion; however, it does not represent a type utilization for any given tactical situation. In actual practice, total commitment of multichannel equipment is seldom made. Equipment for replacement of defective sets and displacement as required must be retained in reserve.

6–13. Field Cable Installation
(fig. 6–6)

a. In all types of operation, plans must be made for the field cable interconnection of the command posts at division main, division alternate, division artillery, and division support command. If time permits, the other major subordinate headquarters should be interconnected with cable. In mechanized and armored divisions, field cable will have a very limited use.

b. Divisions systems control center must develop a list of keying lines and cable installation priorities based on the particular tactical situation. Priorities for this support are determined by such factors as the time available, the tactical situation, and the commitment of multichannel terminal equipments.

c. The cable construction capability of the field cable installation platoon (signal support operations company) is limited. If extensive field cable construction is required, augmentation of the division signal battalion will be necessary.

6–14. Common- and Sole-User Circuits
The division communication system is primarily made up of common-user circuits. Emphasis on common-user circuits will afford maximum utilization of the area features of the communication system. A limited number of sole-user circuits are allocated for command and staff use; their allocation is determined by tactical urgency and the policies existing in the particular division. For further details refer to FM 11–50.

6–15. Internal Radio Nets
(fig. 6–7)

Type radio nets for operation within the division are described below:

a. Operations-Intelligence Net (RATT Net No. 1). This net is used to control operations and intelligence functions within the division. The net control station (NCS) is located at the division main CP. The division signal battalion provides personnel and equipment to operate the stations at division main and division alternate.

b. Administrative Logistics Net (RATT Net No. 2). This net is used for the transmission of administrative and logistical traffic. NCS is located at division support command headquarters, with division main and alternate copying all traffic of interest to G1 and G4. Equipment and personnel for the stations at division main, alternate, and support command headquarters are provided by the division signal battalion.

c. General Purpose Net (RATT Net No. 3). The type net shown is used for general purposes as required. The division signal battalion provides the stations at division main, alternate, rear, support command, and the forward area signal centers. If frequencies and equipments are available, this net may be reconfigured into two nets along functional lines. Three additional RATT sets are available in the support command operations platoon for use in this net as required.

d. Division Warning Broadcast Net—AM. This net is used to broadcast air alerts; enemy and friendly chemical, biological, and radiological (CBR) attack warnings; nuclear strike warnings; effective wind messages; fallout predictions; downwind CBR contamination predictions; and similar information of an urgent operational nature. To insure that all units will have immediate access to the vital information broadcast, the following practices normally apply:

(1) NCS is operated at division main by the division signal battalion. Other stations operated by the signal battalion are so shown in figure 6–7.

(2) Battalions and separate companies, and sometimes subordinate elements thereof, are equipped with separate receivers to monitor these broadcasts.

(3) Organizations authorized in the SOI

UNITS	DIVISION CG / COMMAND NET (FM VOICE) [e]	DIVISION WARNING BROADCAST NET (AM VOICE)	DIVISION RATT NET #1 OPERATIONS INTELLIGENCE	DIVISION RATT NET #2 ADMIN LOGISTICS	DIVISION RATT NET #3 GENERAL PURPOSE	DIVISION AIR REQUEST NET AM (VOICE-CW)	SPOT REPORT RECEIVER NET (UHF)	AIR FORCE AIR REQUEST (AM VOICE-CW)	ARMY AIR REQUEST NET (RATT)	AIR FORCE TACTICAL AIR DIRECTION NET (UHF)	CORPS COMMAND NET (RATT)
DIVISION MAIN	VRC-12 CG NCS / VRC-46 (S)	GRC-106 NCS (S)	GRC-26 NCS (S)	GRC-46 (S) [a]	GRC-26 NCS (S)						GRC-26 (C)
DIVISION ALTERNATE	VRC-12 ASST CG / VRC-46 (S)	GRC-106 (S) [a]	GRC-46 (S) [a]	GRC-46 (S)	GRC-46 (S) [a] f						
DIVISION REAR		GRR-S (S)			GRC-26 (S)						
DIVISION TASE, TDC	VRC-47 (S) / PRC-25 (TACP)(S)	GRR-S (S)				GRC-106 NCS (S)	VRC-24 (S)	GRC-106 (TACP)	GRC-26 (S)	VRC-24 (TACP) (S)	
DIVISION ARTILLERY	VRC-47	GRC-106	GRC-46	GRC-46							
BRIGADES (3 EACH)	VRC-12	GRR-S	GRC-46 [b]		GRC-46 [b] f	GRC-106	VRC-24	GRC-106 (TACP)		VRC-24 (TACP)	
MANEUVER BATTALIONS		GRR-S				GRC-106	VRC-24	GRC-106 (TACP)		VRC-24 (TACP)	
CAVALRY SQUADRON	VRC-12	GRR-S [d]	VRC-29	VRC-29		GRC-106	VRC-24	GRC-106 (TACP)		VRC-24 (TACP)	
AVIATION BATTALION [c]	VRC-47	GRR-S	GRC-46	GRC-46							
ENGINEER BATTALION	VRC-47	GRR-S	GRC-46	GRC-46							
SIGNAL BATTALION	VRC-47	GRR-S (S)									
DASC								(A) (NCS)		(A)	
SUPPORT COMMAND	VRC-47	GRR-S (S)		GRC-46 NCS (S)	GRC-46 (S) f						
BRIGADE TRAINS (3 EACH)				GRC-46							
FORWARD AREA SIGNAL CENTERS (3)		GRR-S (S)			GRC-46 (S) f						
MAINTENANCE BATTALION		GRR-S			GRC-46 (S) g						
MEDICAL BATTALION		GRR-S			GRC-46 (S) g						
SUPPLY AND TRANSPORT BATTALION		GRR-S			GRC-46 (S) g						
DIVISION AOA BATTALION	VRC-47	GRC-106	GRC-46		GRC-46						

LEGEND

(S) RADIO SET PROVIDED BY DIV SIG BN

(C) RADIO SET PROVIDED BY CORPS SIG. BN

a ALTERNATE NCS

b INFANTRY BRIGADE SHOWN, SUBSTITUTE AN/VRC-29 FOR AN/GRC-46 IN MECHANIZED AND ARMORED BRIGADES

c AVIATION BATTALION IS ORGANIC TO INFANTRY DIVISION ONLY

d IF TRANSMITTING IN THIS NET IS REQUIRED, CAVALRY SQUADRON WILL EMPLOY AN/GRC-106 NORMALLY USED IN DIVISION AIR REQUEST NET

e NOT ALL POSSIBLE STATIONS SHOWN, ADDITIONAL RADIO STATIONS MAY BE DIRECTED TO OPERATE IN THIS NET AS REQUIRED

f NORMALLY MONITOR: OPERATE ONLY AS DIRECTED

g RADIO SETS TO UNITS PROVIDED BY DIVISION SIGNAL BATTALION WHEN UNIT IS LOCATED AWAY FROM DIVISION SUPPORT COMMAND HQ

(A) AIRFORCE RADIO SET

NOTES:

1. ALL ARMY RADIO SETS SHOWN IN AIR FORCE RADIO NETS TO BE REPLACED BY AIR FORCE SETS
2. AN/GRC-46 TO BE REPLACED BY AN/GRC-142 WHEN AVAILABLE
3. AN/GRC-26 TO BE REPLACED BY AN/GRC-108 OR AN/GRC-122 WHEN AVAILABLE

Figure 6-7. Type division radio nets, armored, infantry, or mechanized division.

may switch radio equipments from other nets to transmit in this net; for example—

(*a*) Division ADA battalion usually broadcasts all air alerts.

(*b*) Cavalry squadron may broadcast urgent reconnaissance information of immediate importance to elements of the division.

e. Division Air Request Net, AM. This net is used to forward requests for tactical air support from maneuver battalions and brigades to the NCS at TASE DTOC. Primarily, the net is intended for preplanned air requests but also may be used for immediate air requests if Air Force or other Army facilities are not available. Refer to chapter 4. The division signal battalion provides the personnel and equipment to operate the station at division main or alternate CP.

f. Division CG Command Net—FM. This net provides the division commander with short range direct voice communications to all major subordinate unit commanders. Because of the large number of stations, operations in this net are restricted; however, commanders and/or staff officers of the units indicated (fig. 6–7) will monitor this net continually, operating in it when directed. Stations other than those shown (fig. 6–7) may be directed to operate in this net. The following additional facts are emphasized:

(1) All radio sets are organic to the particular unit and are vehicular mounted.

(2) Retransmission stations in the net may be established as required. For this purpose, RWI stations or aerial retransmission may be utilized.

g. Need for Flexibility in Internal Radio Nets. The three RATT nets shown in figure 6–7 embody the greatest economy in the employment of equipments and frequencies; however, these configurations represent only one flexible solution—the actual employments will depend upon the desires of the division commander, the tactical situation, and the professional interpretation of the DSO. For example, in some tactical environments, a four RATT net arrangement along functional lines will often prove more acutely responsive to combat communication needs. This same type of rationale is equally applicable to the division CG command net or to the constitution of an FM operations-intelligence net.

6–16. External Radio Nets

(fig. 6–7)

a. Higher Echelon Air Request Net (RATT). This net, shown as the army air request net, in figure 6–7, is used to request air support for the division from a higher army headquarters. Primarily, this net is intended for the transmission of preplanned air requests but also may be used for immediate aid requests if Air Force or other army communication facilities are not available. Refer to chapter 4 for more complete information on air request procedures. The RATT station at division headquarters is provided by the division signal battalion for use at the TASE DTOC.

b. Corps Command Net, RATT. Corps command RATT nets are used by the corps commander for the command and operational control of subordinate units. When the division functions as part of the corps, the corps signal battalion furnishes the RATT station at each division main CP for operation in the designated corps command net.

c. Army Spot Report Receiver System, UHF. The signal battalion operates a UHF-voice station in this net at TASE DTOC. The station is used for monitoring Air Force close air support missions flown for the division. In addition, the net is used as a warning system from AF planes to DTOC; urgent information is immediately retransmitted by DTOC over the division warning broadcast system. Other division stations in this net are the headquarters of the brigades, maneuver battalions, and cavalry squadron.

d. Air Force Air Request Net, AM. This net is used by TACPs to request immediate air support from the Air Force. As an interim measure, the station at division main may be provided by the air support signal team of the division signal battalion. Refer to chapter 4.

e. Air Force Tactical Air Direction Net, UHF. This net is used by TACPs to direct Air Force aircraft flying direct support missions. As an interim measure, the air support signal team of the division signal battalion

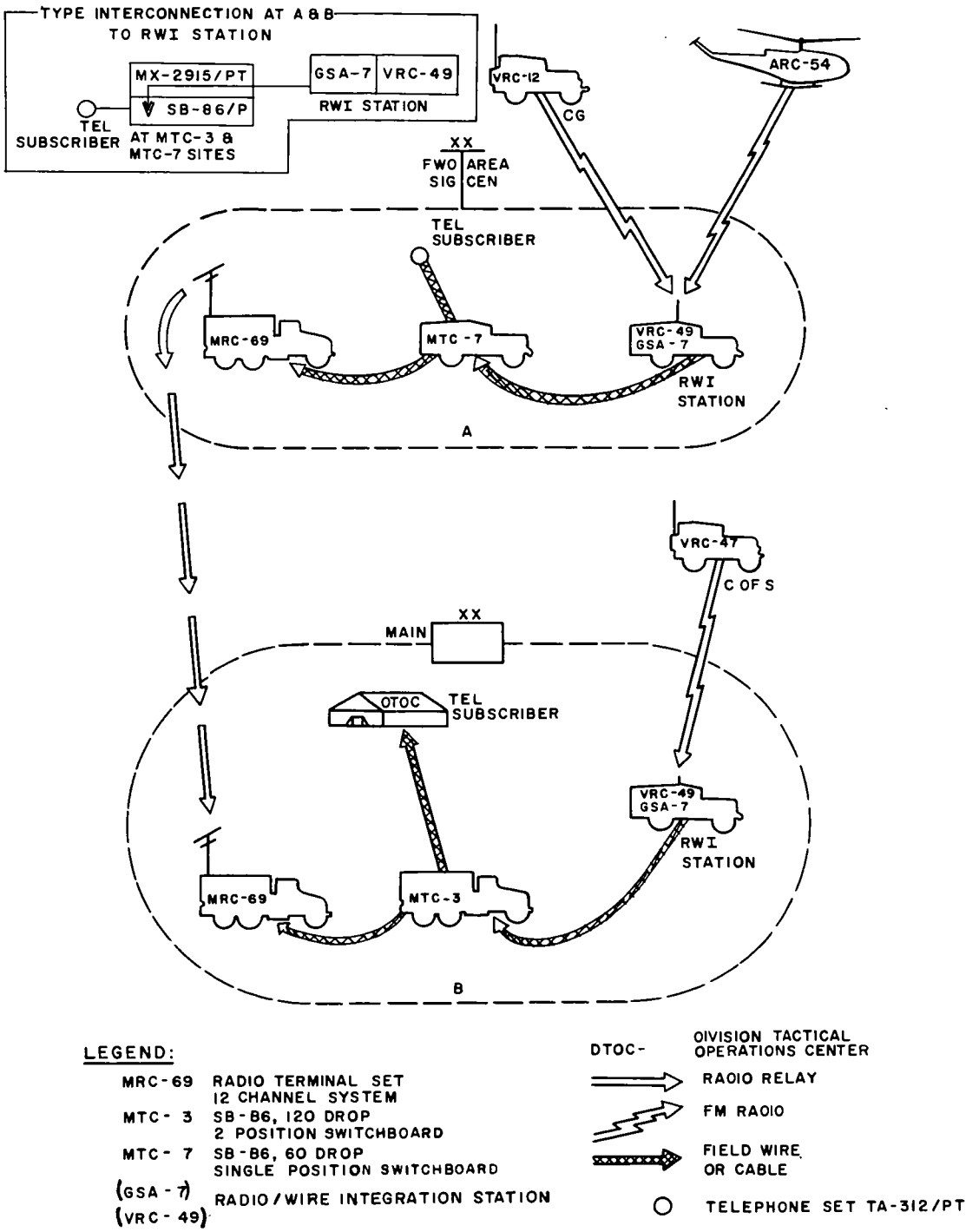


Figure 6-8. Type utilization of RWI stations, armored, infantry, or mechanized division (at division main and a forward area signal center).

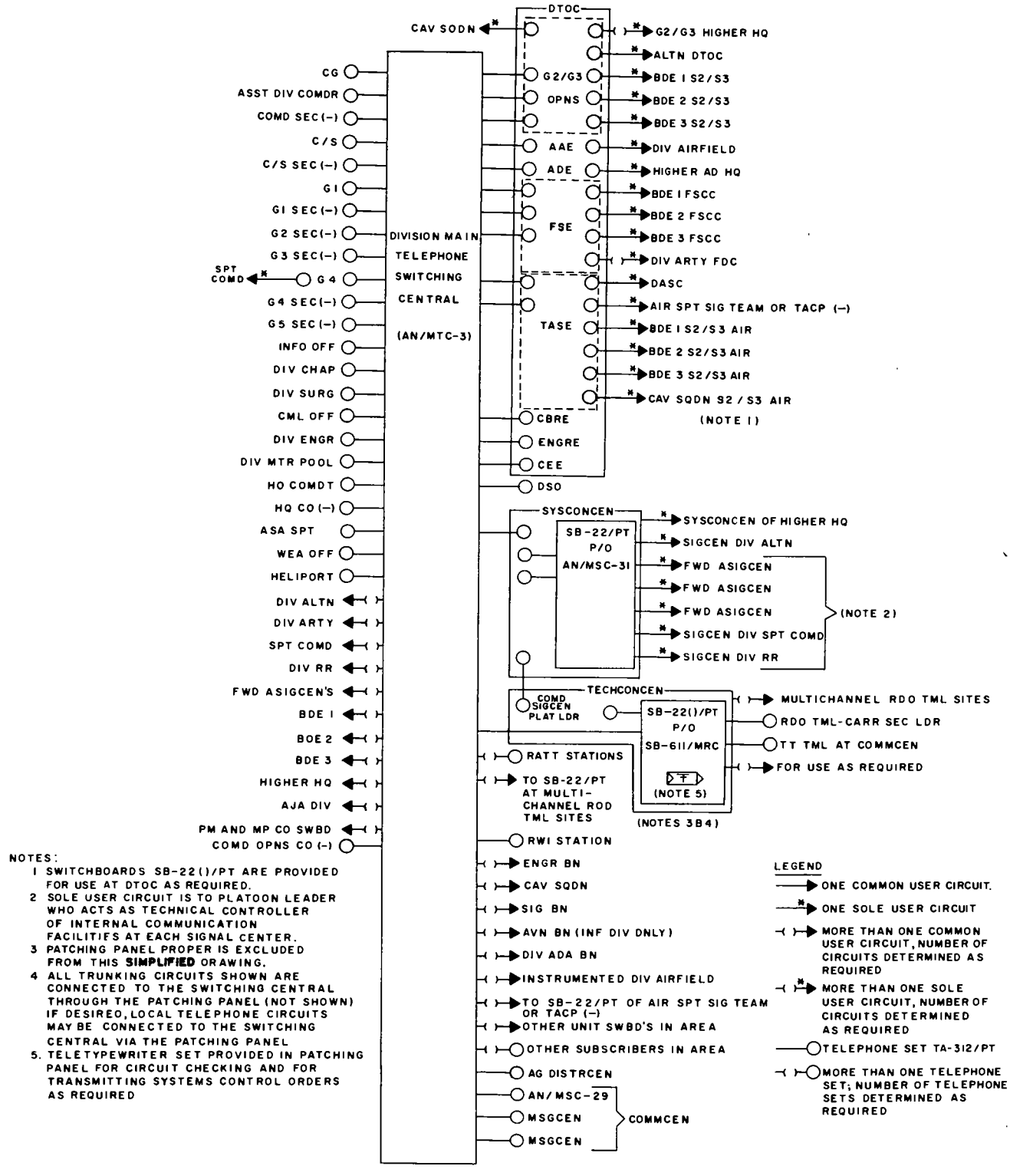
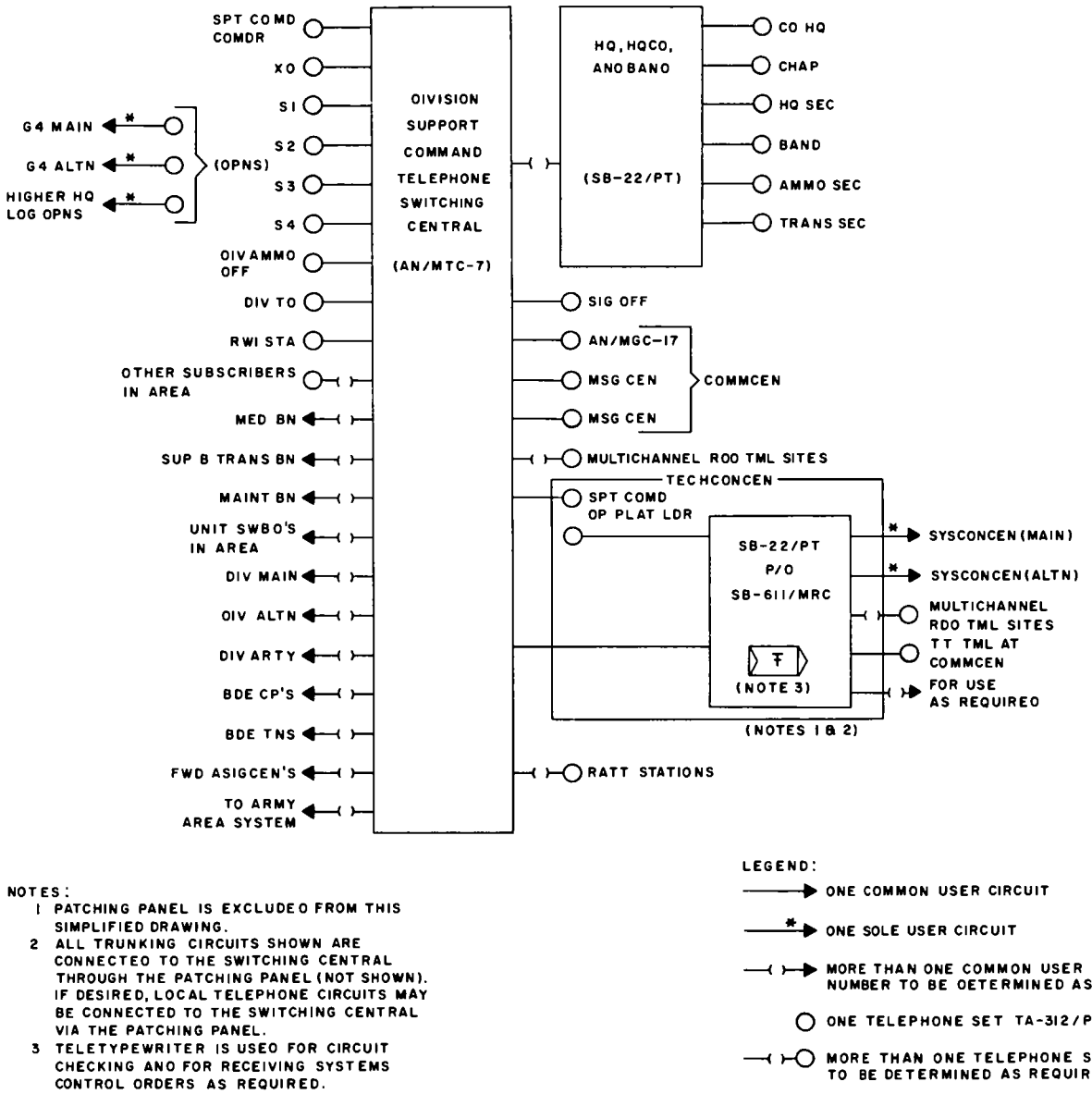


Figure 6-9. Type telephone and circuit distribution diagram for division main signal center, armored, infantry, or mechanized division.



NOTES:
1. PATCHING PANEL IS EXCLUDED FROM THIS SIMPLIFIED DRAWING.
2. ALL TRUNKING CIRCUITS SHOWN ARE CONNECTED TO THE SWITCHING CENTRAL THROUGH THE PATCHING PANEL (NOT SHOWN). IF DESIRED, LOCAL TELEPHONE CIRCUITS MAY BE CONNECTED TO THE SWITCHING CENTRAL VIA THE PATCHING PANEL.
3. TELETYPEWRITER IS USED FOR CIRCUIT CHECKING AND FOR RECEIVING SYSTEMS CONTROL ORDERS AS REQUIRED.

LEGEND:
- ONE COMMON USER CIRCUIT
- * ONE SOLE USER CIRCUIT
- MORE THAN ONE COMMON USER CIRCUIT; NUMBER TO BE DETERMINED AS REQUIRED
- ONE TELEPHONE SET TA-312/PT
- MORE THAN ONE TELEPHONE SET; NUMBER TO BE DETERMINED AS REQUIRED

Figure 6-10. Type telephone and circuit distribution diagram for division support command signal center, armored, infantry, or mechanized division.

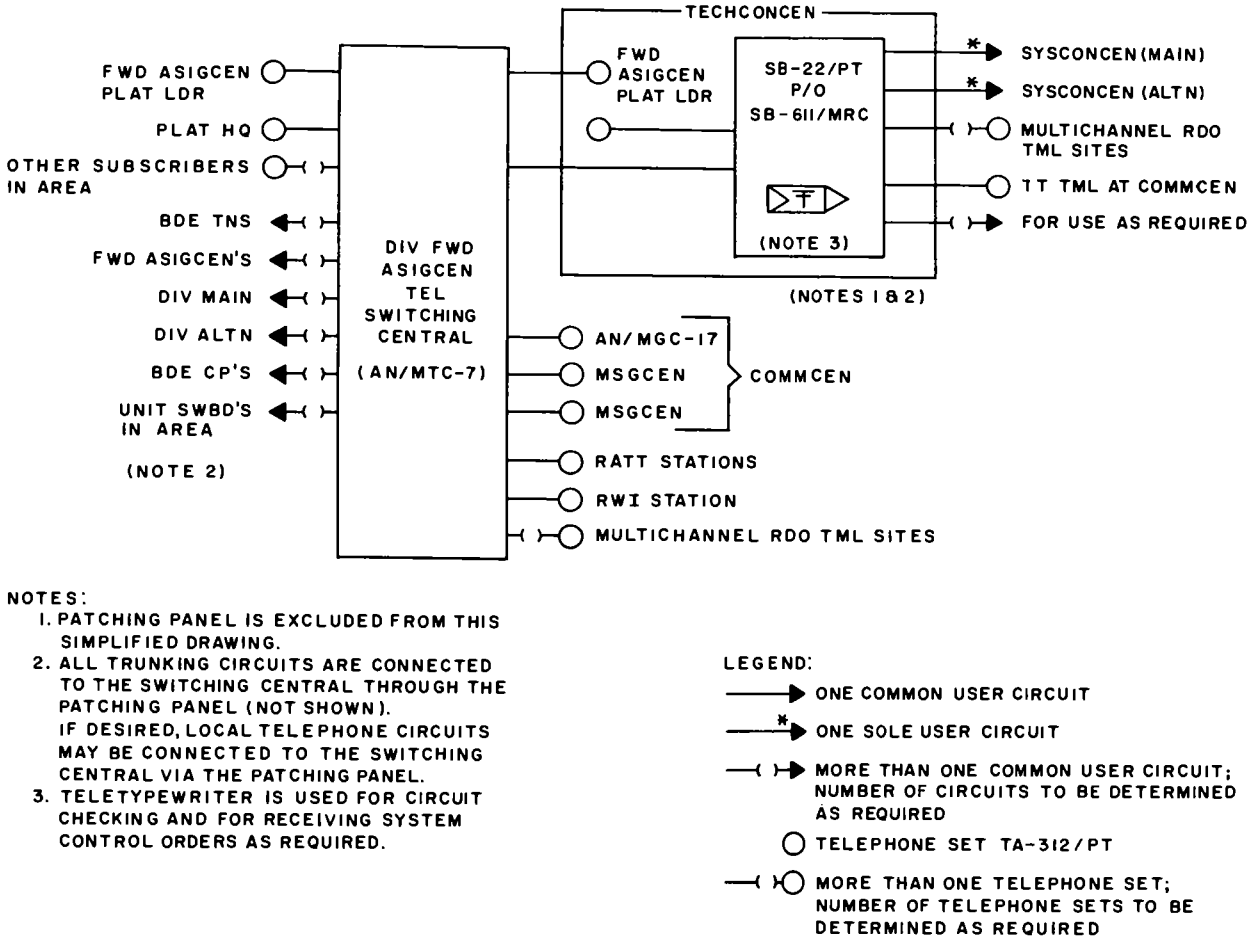


Figure 6–11. Type telephone and circuit distribution diagram for division forward area signal center, armored, infantry, or mechanized division.

may provide the station at division main. Refer to chapter 4.

6–17. FM Radio/Wire Integration
(fig. 6–8)

The division signal battalion operates FM radio/wire integration stations (RWI) at each signal center except division rear. These centers are used to interconnect FM radio stations operating within the division area to the division communications system. Interconnection from the RWI station to a main switchboard is made through a remote control unit and a manual telephone switchboard.

6–18. Telephone Switching at Division Signal Centers
(figs. 6–9–6–12)

Type telephone distribution and switching systems for selected type division signal centers are shown in figures 6–9, 6–10, 6–11, and 6–12. Refer to FM 11–50 for further information.

6–19. Messenger Service

The signal battalion provides messenger service from the command echelons of division headquarters to all organic and attached units.

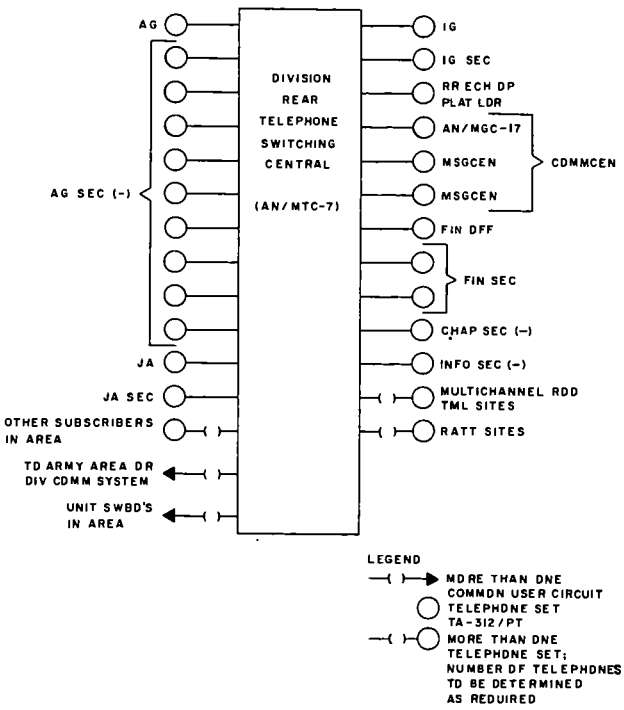


Figure 6–12. Type telephone and circuit distribution diagram for division rear communications center, armored, infantry, or mechanized division.

In most cases, using units will be required to deliver outgoing messages to, or pick up incoming messages at, the nearest signal center. Normally, messengers are dispatched from higher to lower headquarters; in certain instances, however, special messengers may be sent from subordinate to superior headquarters. Liaison officers, who habitually travel between command posts are also utilized to carry urgent messages.

a. Motor Messengers. The signal battalion is manned and equipped to provide motor messenger service. Motor messengers are dispatched in two main teams as driver and guard respectively.

b. Air Messenger Service. The relative efficiency of air messenger service is greatest when the road systems are congested, enemy infiltrators are active, or the distances between headquarters are excessive. In these situations, the division signal battalion will provide the messengers while aircraft are provided by the infantry division aviation battalion or obtained from other sources in the armored and mechanized divisions. Aircraft arrangements are provided through coordination between the division aviation officer and the DSO.

Section III. INTERNAL SIGNAL BATTALION COMMUNICATIONS

6–20. Radio Net (FM-Voice)

a. A type signal battalion radio net is shown in figure 6–13. This net will enable the battalion commander/DSO to maintain direct contact with all elements of the battalion. If battalion units are widely scattered and telephone service is not immediately available, a retransmission station may be necessary to maintain communications.

b. As indicated in figure 6–13, only a minimum number of stations will be required to operate in this net at any one time; for example, radio stations at multichannel terminal sites will habitually use the multichannel networks for telephone communication to signal battalion headquarters—thus, FM radio sets at these sites will be used only initially during establishment of the multichannel radio network.

c. At times and if frequencies are available, it may be desirable to redistribute the battalion radio sets shown into more than one FM net. A second possible solution is summarized below:

(1) *Signal Battalion Command Net—FM.* This net will consist of the battalion commander, ADSO (NCS), S3, S4, and the three company commanders.

(2) *Systems Control Net—FM.* This net will consist of the systems control center as NCS and the remaining battalion radio stations not included in the signal battalion command net. It is estimated that only a minimum number of stations will have need to operate in this net.

6–21. Signal Battalion Wire System

A type internal wire system for use at signal

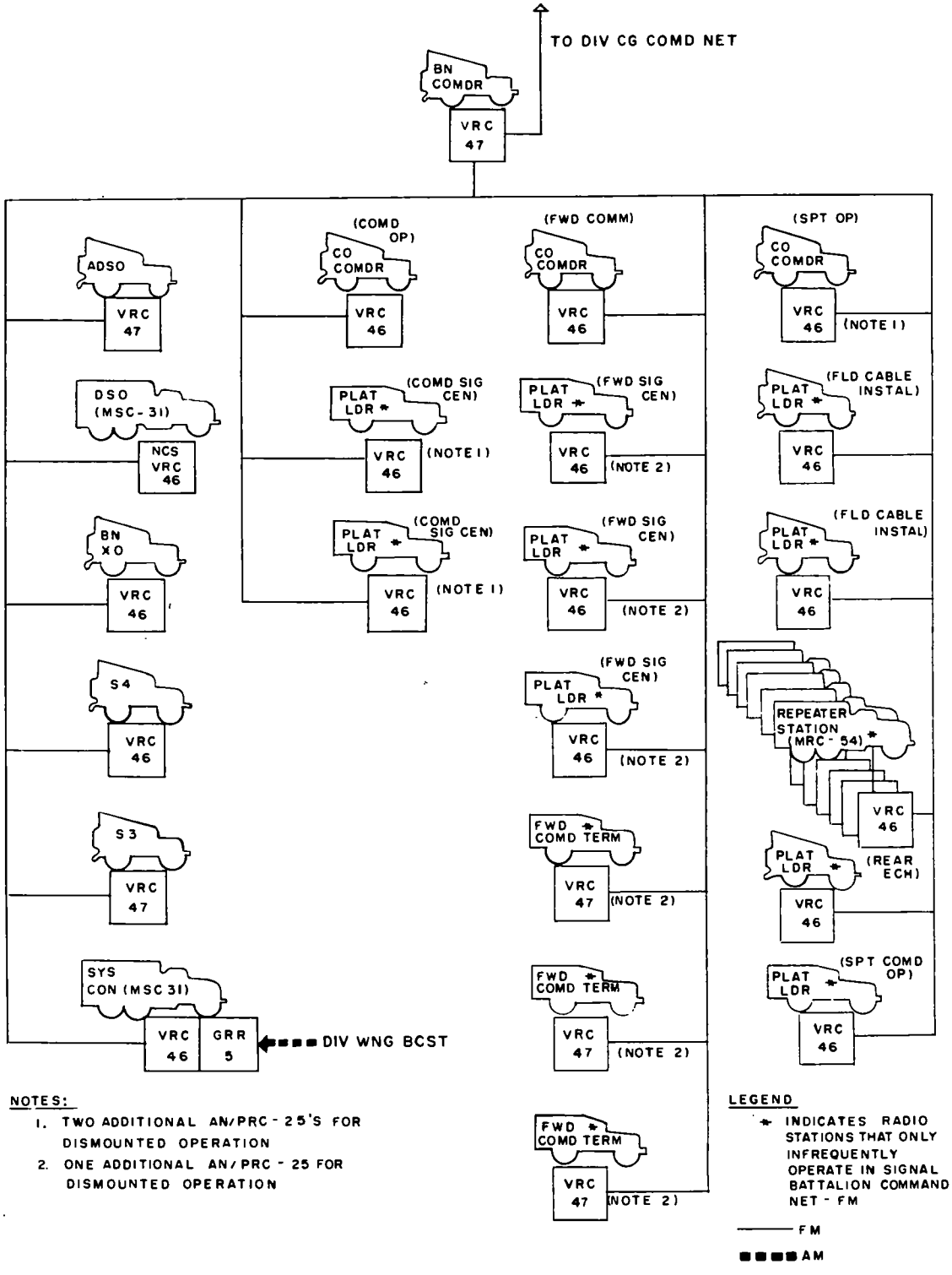


Figure 6-13. Type FM radio net for division signal battalion, armored, infantry, or mechanized division.

battalion headquarters is shown in figure 6-14. The switchboard shown is normally set up in the vicinity of the division main CP and is used for local signal battalion service in this area.

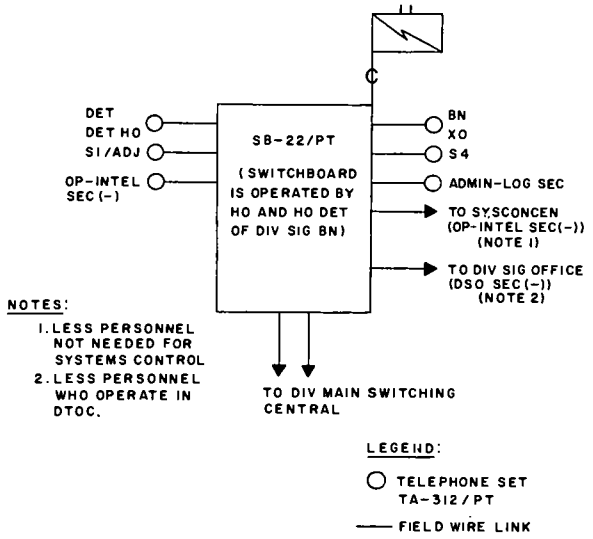


Figure 6-14. Type internal wire system for the division signal battalion, armored, infantry, or mechanized division.

CHAPTER 7

BRIGADE COMMUNICATIONS, ARMORED, INFANTRY, OR MECHANIZED DIVISION

Section I. GENERAL INFORMATION

7-1. Brigade Headquarters

a. The brigade headquarters is the tactical headquarters immediately subordinate to the division headquarters. It has command and control of such attached and supporting elements as may be allocated by division. The organization of this tactical unit is, therefore, completely flexible. The communication system of the brigade must provide the versatility required for control of the type organization dictated by the commander's plan. The brigade headquarters must be prepared to act as an emergency successor for the division headquarters echelons (main, alternate, and/or division artillery). This chapter will consider the specific communication requirements and capabilities in the brigade of ground-type divisions; however, the material of this section will also apply to the airborne division brigade. Refer to FM 7-30 and FM 17-30 for more complete information on brigade operations; also, see TOE 7-42, 17-42, and 37-42 for the organization of division brigade headquarters.

b. During normal operations, the brigade headquarters may operate in two echelons—a command post composed of the commander and such members of his staff as desired; and the trains, where support elements of the command, including field trains from attached and supporting units of the brigade, are located. Organic communications supplied by the communications platoon, headquarters and headquarters company of the brigade, provide the means for command and control of brigade headquarters elements.

7-2. Brigade Signal Officer

The brigade signal officer is a member of the brigade staff. He has one assistant, the platoon leader of the brigade communications platoon. General duties of the signal officer are covered in paragraph 2-6. In addition to these duties, the brigade signal officer has operational control over the communications platoon and coordinates signal matters with personnel of division signal battalion units in the brigade area.

Section II. BRIGADE RADIO NETS AND WIRE SYSTEMS, ARMORED, INFANTRY, OR MECHANIZED DIVISION

7-3. Brigade Communications to Higher Headquarters

The brigade maintains communications to higher and adjacent headquarters by operating subordinate stations in division radio nets and utilizing telephone and teletypewriter circuits provided by the division communications system.

a. Radio (figs. 7-1, 7-2 and 7-3).

(1) *Division RATT Net No. 1 (Operations-Intelligence).* The brigade communications platoon will normally operate a station in this net from the command post area. Over this net the brigade receives orders and exchanges intelligence information with DTOC. When authorized, the brigade may use the net for communication to other brigade headquarters, division artillery, or other units operating in the net.

(2) *Division RATT Net No. 2 (Administrative-Logistics).* The brigade communications platoon also operates a RATT station in

the Division RATT Net No. 2. The station is located in the brigade trains area. This net provides for the transmission of administrative and logistical information to the division support command and to the division command post as required. Units located in the brigade trains area may also send administrative/logistics information to higher headquarters over this net.

(3) *Division CG/Command Net—FM.* For communication with division, the brigade commander maintains a radio in the division CG/command net from the command post or the command group. This net is used to direct and coordinate operations and other urgent tactical matters. The brigade S3 and brigade operations will monitor this net and enter only to represent the brigade commander in his absence.

(4) *Division Air Request Net—AM.* This net is used to coordinate and to submit requests for tactical air reconnaissance, close air support, and tactical airlift from the Air Force or organic Army aircraft. The brigade S3 air operates a station from the command post; however, the net is for the use of the S2 air or S3 air on all matters involving tactical air support.

(5) *Division Warning Broadcast Net—AM.* The S3 air monitors this voice net, which is used by division to transmit alerts, warnings, and CBR data.

(6) *Army Spot Report Receiver System—UHF.* The brigade radio station in this army net is used to monitor Air Force air operations and to afford the brigade a source of intelligence information resulting from observation during tactical air operations.

(7) *Air Force Air Request (AM).* The brigade station monitors transmissions or uses this net to request immediate air support from the Air Force. This is a TACP operated station (refer to ch 4).

(8) *Tactical Air Direction (UHF—AM).* The brigade station (TACP operated) may be used to direct or monitor direct air support missions being flown for the brigade (refer to ch 4).

Figure 7–1. Type radio nets, armored division brigade.
(Located in back of manual)

b. Multichannel Communications. Command terminal teams from the signal battalion's forward communication company provide multichannel radio terminals at the separate brigade headquarters (fig. 7–4). This signal support provides telephone and teletypewriter service from brigade headquarters to other subscribers in the division communication system. Each brigade command terminal team also installs cable from the multichannel radio terminal to the brigade switchboard.

c. Messenger. Messenger service, both scheduled and special, is provided by the division signal battalion to the forward signal center in the brigade area and the brigade headquarters. Messengers organic to the brigade communications platoon may also be used for message service to higher headquarters. Air messenger service will be provided.

d. Visual Signals. The use of visual signals in brigade units follows generally accepted practice. Panels are used to display unit headquarters identification numbers as assigned in the SOI. Friendly unit recognition and front-line identification are accomplished by the display of fluorescent panels. Pyrotechnics, lights, and smoke signals are used with the prearranged meanings established in the SOI and operation orders.

7–5. Communications to Subordinate Units

Communications to subordinate units of the brigade include the use of all means available to meet the requirements for command, control, and coordination.

a. Radio (figs. 7–1, 7–2 and 7–3).

(1) *Brigade Command Net—FM.* This net is the primary means for command control of major subordinate elements of the brigade. Rapid voice communication from the brigade commander and his staff to commanders of subordinate elements is provided by this net. Brigade staff members operate in this net for operational intrastaff coordination and coordi-

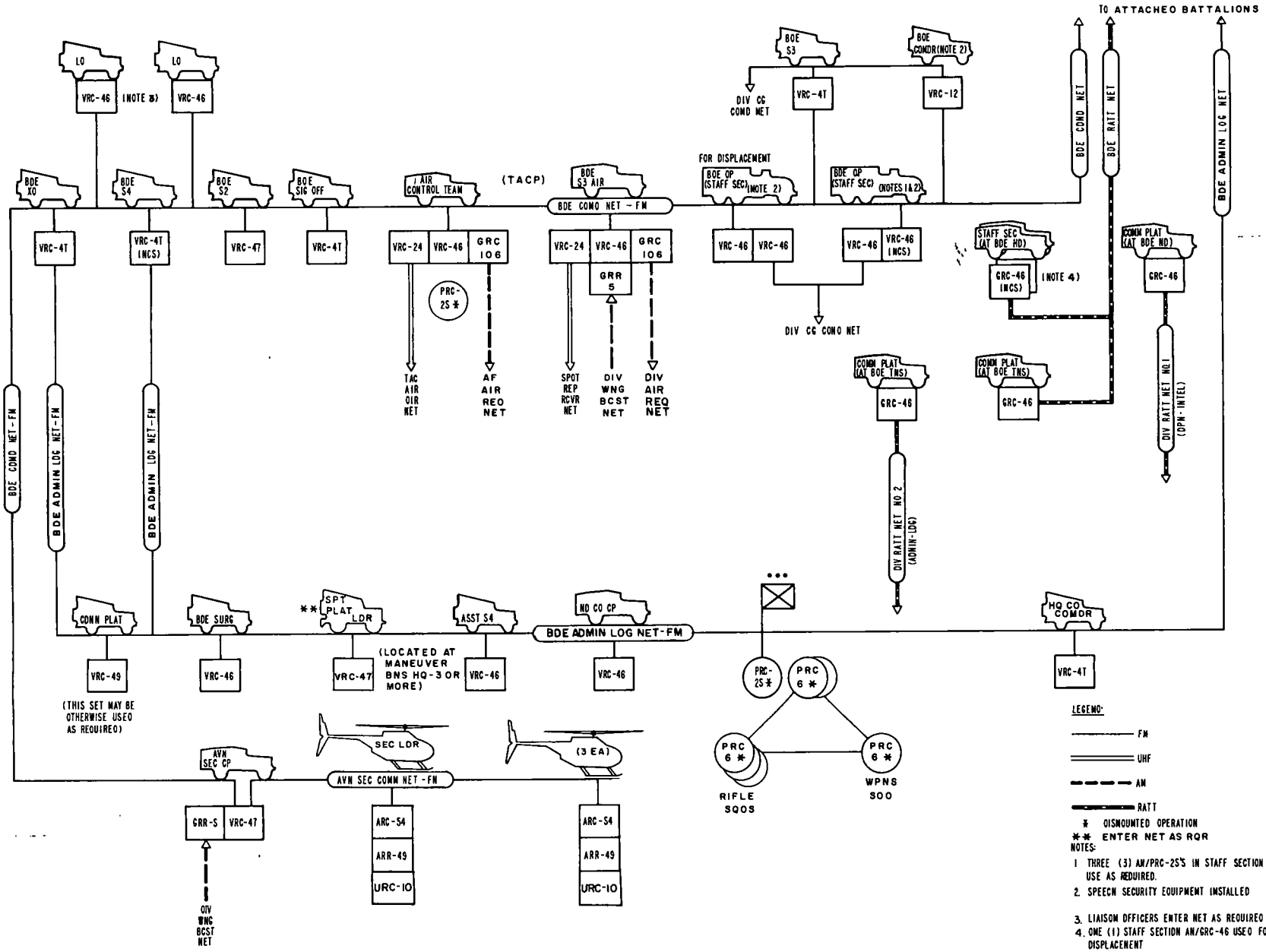


Figure 7–2. Type radio nets, infantry division brigade.

Figure 7–3. Type radio nets, infantry division (mechanized) brigade.
(Located in back of manual)

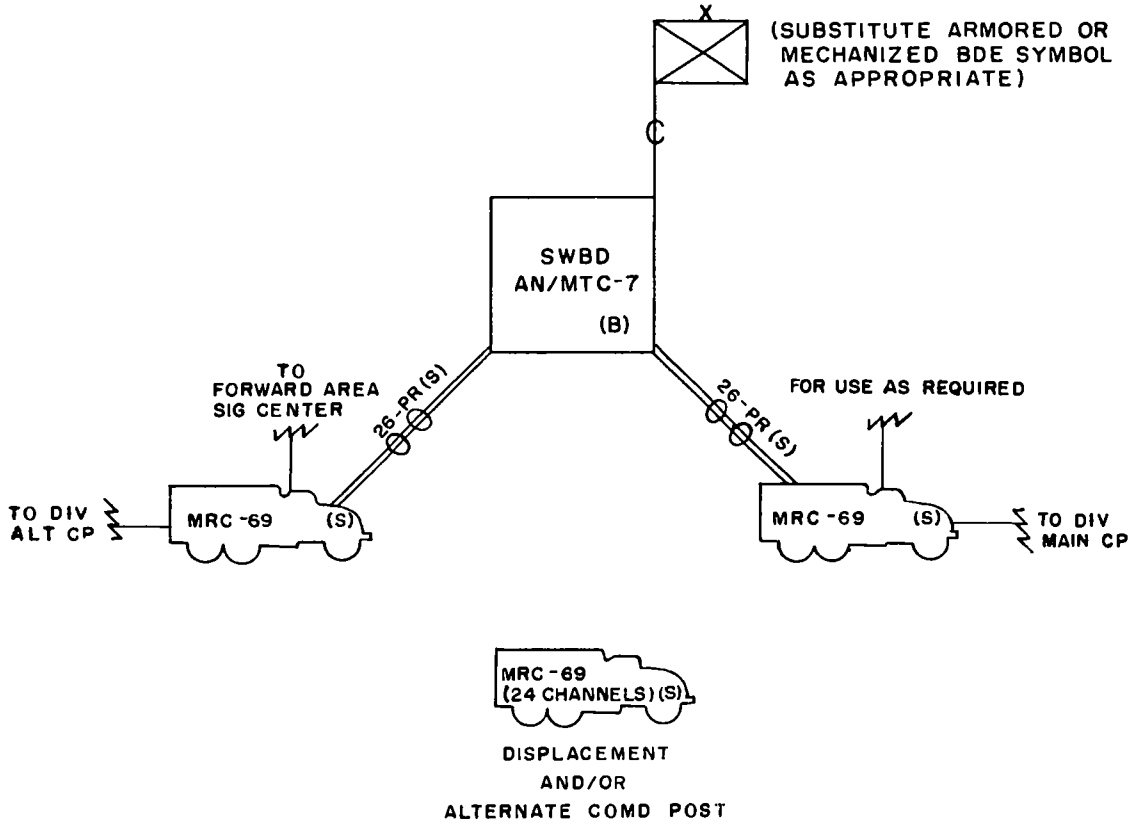


Figure 7–4. Type multichannel radio support provided to brigade headquarters by the division signal battalion (forward command terminal teams of forward communications company), armored, infantry, or mechanized division.

nation with subordinate elements. Unit representatives attached to, or in support of the brigade, such as artillery, engineer, and tactical air, enter the net as required. NCS is normally located at brigade operations.

(2) *Brigade Administrative Logistics Net—FM.* This net is used for the transmission of administrative and logistical traffic both within, and between, the command post and brigade trains area. The brigade S1/S4 center normally operates the net control station from the brigade trains area. Battalions and other attachments to the brigade operate stations in this net for coordination of administration and logistics as required.

(3) *Brigade Intelligence Net—FM.* This net is used in the brigade for the exchange of information and intelligence data between the brigade S2 and attached battalion S2's (fig. 7–1). The brigade intelligence officer (S2) operates the net control station. Other type brigades may establish a brigade intelligence net (FM) should the requirement develop either through the mission or the tactical situation.

(4) *Brigade RATT Net.* This net is a primary means for the transmission of reports, written orders, and information requiring a written record of communications involving the brigade command post, brigade trains, and the attached battalions. NCS is normally located with the operations staff section at brigade headquarters.

(5) *Aviation Section Command Net—FM.* This net provides for internal command and control of both ground and flight operations of the aviation section of the brigade headquarters and headquarters company. NCS is either in the platoon commander's aircraft or at the vehicular ground station. In addition, monitoring or operating in the brigade command net is required.

b. Wire. Wire circuits (figs. 7–5, 7–6 and 7–7) are installed by the brigade communications platoon for internal communication within the brigade command post and brigade trains, and from the command post to the brigade trains and attached battalions. These circuits are installed, as required, and their need is determined by the tactical situation, the time available, and the desires of the commander.

c. Supplemental Means.

(1) Messenger service, both scheduled and special, is provided by the brigade to subordinate units. Air messengers may be used.

(2) Visual and sound communication between the brigade and subordinate units is used as directed in the operation orders or the SOI.

Section III. BRIGADE COMMUNICATIONS PLATOON, ARMORED, INFANTRY, OR MECHANIZED DIVISION

7–6. General

The brigade communications platoon is organic to each brigade headquarters and headquarters company. Each platoon is organized and equipped to install, operate, and supervise the internal brigade communications system and to extend communications to all attached battalions and other units of the brigade. The platoon is organized into a platoon headquarters, message center and wire section, and radio section.

7–7. Personnel and Their Duties

a. The platoon leader commands the communications platoon, under operational control of the brigade signal officer. In addition, the communications platoon leader acts as the assistant brigade signal officer.

b. The communications chief coordinates activities of all personnel in the communications platoon, assists the platoon leader, and maintains records and reports.

c. Message center and wire section personnel include—a *section chief* who operates the message center; *message center personnel* for message handling and cryptographic service; switchboard operators and wiremen to install, operate, and maintain the local wire system and install trunk lines to attached units; *motor messengers* who make scheduled and special message deliveries; and *teletypewriter operators* to operate the organic teletypewriter equipment.

d. The radio section provides radio teletypewriter or CW operators and equipments to operate AM–RATT stations except the station in the brigade RATT net which is operated by personnel assigned to the brigade headquarters staff section.

7–8. Operations

a. In the command post area, the message center is the focal point of operations for the brigade communications platoon. The message center and wire section provide message processing service, teletypewriter service, and the switchboard for the wire system terminal. During movement of the brigade, a mobile message center is operated by the communications platoon. The wire system within the command post is installed and operated by message center and wire section personnel. Other supplemental means of communication (such as panel displays) are provided by members of the message center.

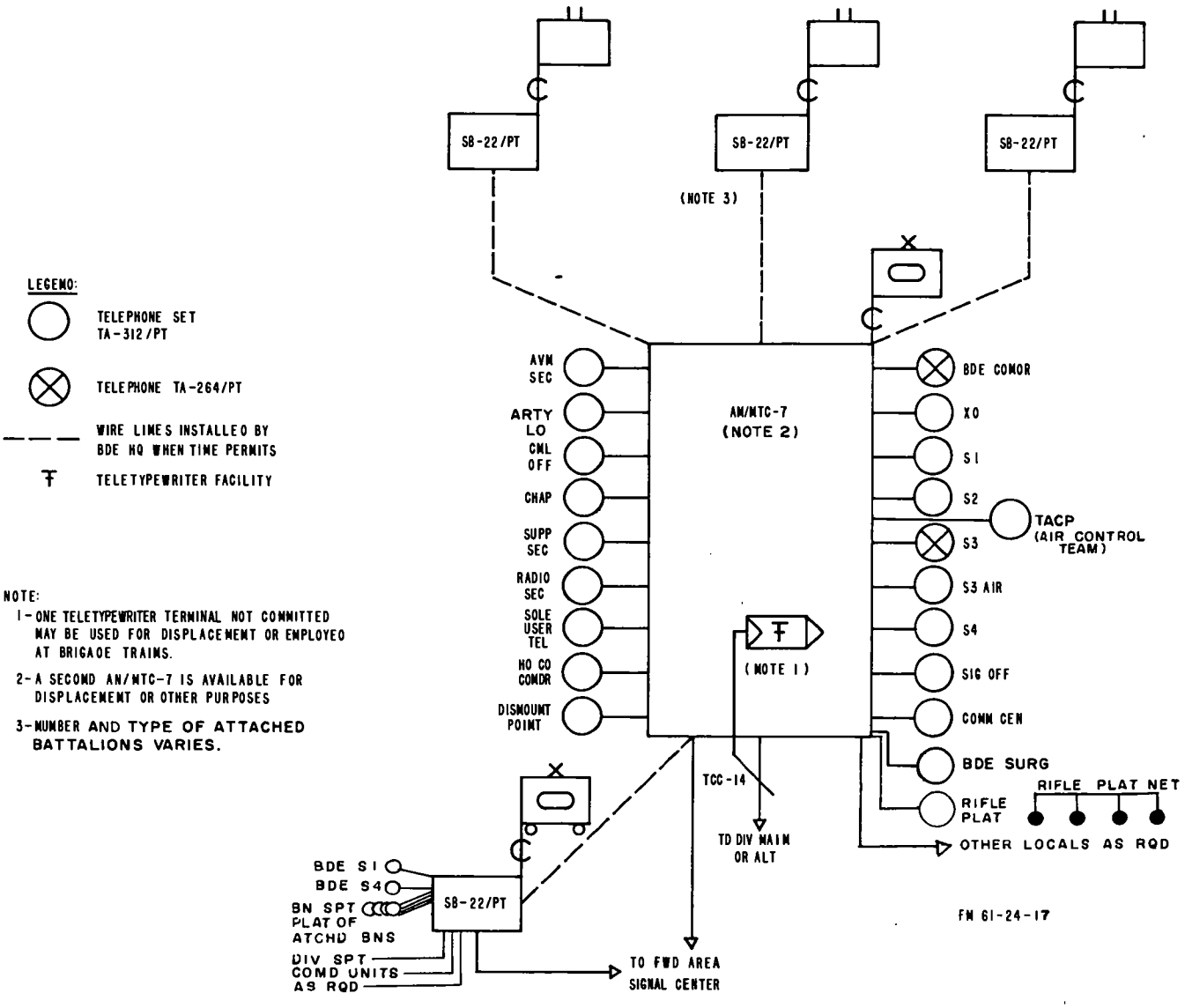


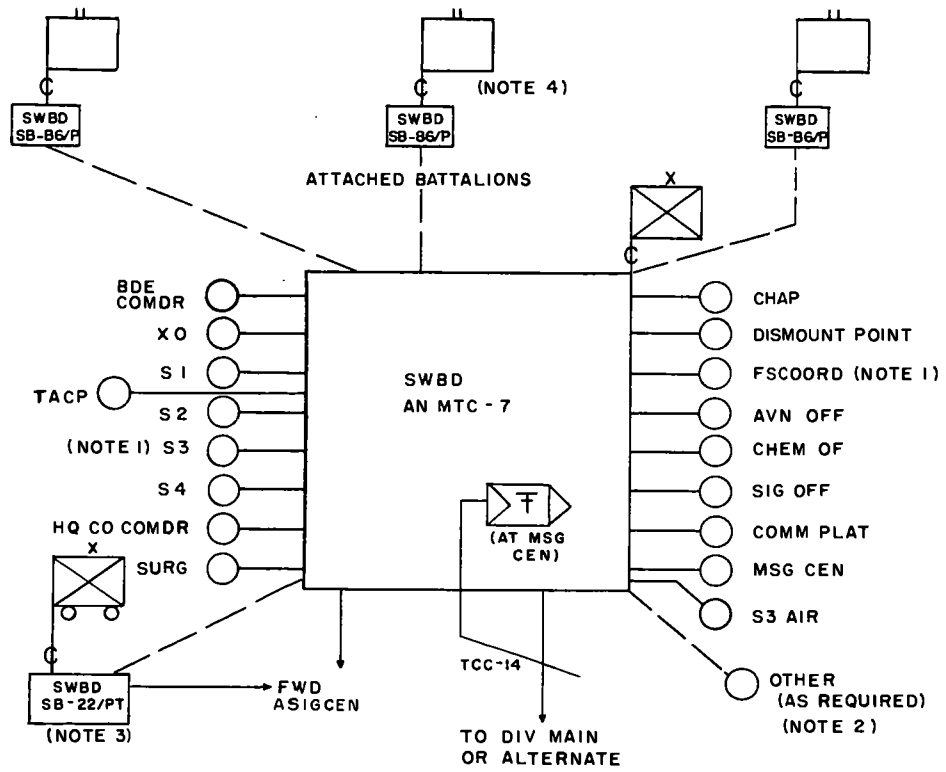
Figure 7–5. Type wire system, armored division brigade.

b. Radio teletypewriter teams and intermediate speed radio operators are assigned by TOE to the operations, intelligence, and logistical staff sections, and remain a part of those sections during field operations. The communications platoon operates a RATT station in a net of the higher headquarters as required.

7–9. Communications Maintenance Support

a. The brigade communications platoon has radio mechanics who provide organizational maintenance to elements of the headquarters and headquarters company of the brigade. Normally, the communications platoon leader or the communications chief will assign these men to operate from a central location in the command post, but, if necessary, they may be sent to the trains or be associated with the command group.

b. Limited direct support maintenance and direct exchange are provided by the logistical elements of the support command operating in support of the brigade.



NOTES.

1. SOLE USER CIRCUITS WILL BE ESTABLISHED THROUGH DIVISION COMMUNICATIONS SYSTEM TO DIVISION HEADQUARTERS AS REQUIRED.
2. INCLUDES OTHER SUPPORT OR ATTACHED UNITS, RADIO TRUCKS, AND AUGMENTATIONS.
3. INITIAL WIRE COMMUNICATIONS ESTABLISHED THROUGH DIVISION COMMUNICATIONS SYSTEM.
4. NUMBER AND TYPE OF ATTACHED BATTALIONS WILL VARY.

LEGEND.

- ○ TELEPHONE SET TA-312/PT.
- ——— FIELD WIRE.
- — — — INSTALLED BY BRIGADE HEADQUARTERS.
- ⊤ TELETYPEWRITER FACILITY.

Figure 7-6. Type wire system, infantry division brigade.

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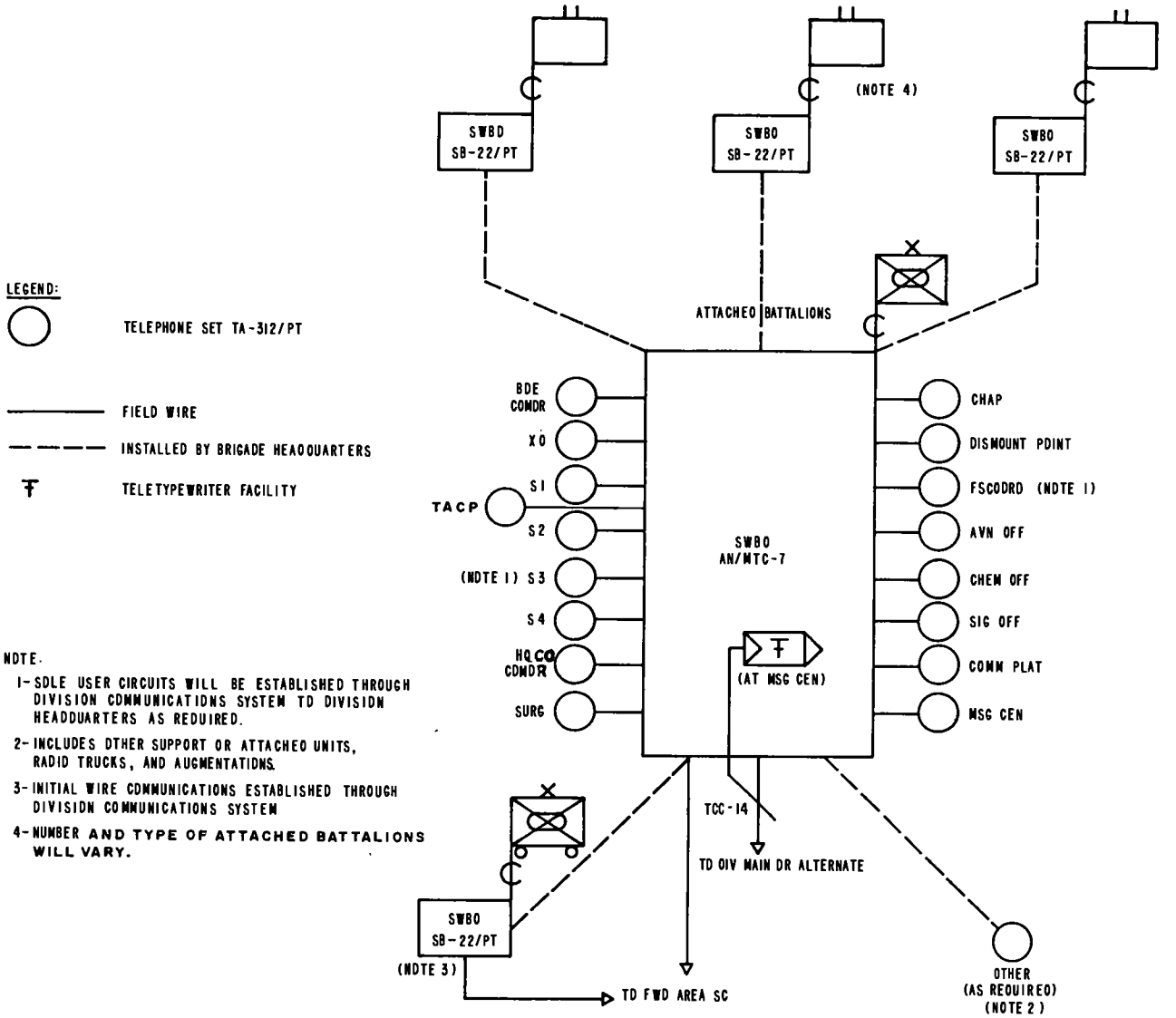


Figure 7-7. Type wire system, infantry division (mechanized), brigade.

CHAPTER 8

TANK, INFANTRY, AND MECHANIZED BATTALION COMMUNICATIONS

ARMORED, INFANTRY, OR MECHANIZED DIVISION

Section I. BATTALION HEADQUARTERS COMMUNICATIONS

8–1. Basic Considerations

a. The combat battalions of the land divisions discussed in this chapter include the infantry battalion, the infantry (mechanized) battalion,[1] and the tank battalion. Individual differences in the communications configurations of the battalions will be illustrated in the accompanying diagrams. Refer to FM 7–20 and FM 17–20 for more complete details on battalion operations; for equipment and organization, refer to TOE 7–15, 7–45, and 17–35.

b. Battalion headquarters communications is provided by the communications platoon of the battalion headquarters and headquarters company. Each communications platoon provides equipment and personnel sufficient to maintain battalion communications internally, from battalion headquarters to subordinate units, and externally, from battalion headquarters to higher headquarters.

c. Although not separately illustrated in this manual, it is emphasized that a mechanized battalion operating as a subordinate unit of an armored brigade will establish and operate radio nets and wire systems similar to those shown for the tank battalion (figs. 6–1 and 6–4). This will insure uniform integration into the armored brigade communication system; however, differences in communications employment among the three combat battalions should be minor.

[1] Hereafter in this manual the infantry (mechanized) battalion will be referred to as the mechanized battalion.

8–2. Command Communications

During operations, the battalion headquarters normally operates in two echelons—the command post and the battalion trains.

a. Command Post Communications. The main center for command and control of the battalion is located in the battalion command post, where the preponderance of communication facilities is assigned. The communication facilities and equipment required include the net control radio stations for the battalion command and logistical nets, AM radios for contact with higher headquarters, wire and switching service, and messenger and message center service.

b. Trains Communications. Battalion trains are normally divided into combat trains and field trains: the combat trains are usually located in the vicinity of the battalion command post and consist of vehicles, equipment, and personnel required for immediate support of combat operations; the field trains are located in the brigade trains area and consist of vehicles, equipment, and personnel not required for immediate combat service support. For communication between trains, battalion logistical personnel are provided with FM radio sets to operate in the battalion administrative logistic net. Contact with higher headquarters for combat service support is maintained through FM and AM radio nets.

c. Combat Support Communications. Combat support elements with each battalion may include artillery and engineers when the battalion is organized for combat. These elements,

when placed in support, enter the battalion command net and also maintain communication in their own appropriate nets. When attached, they enter the nets of the combat battalion but are not normally required to maintain communication with their parent unit.

d. Administrative Communications. Control of logistical and administrative support is centered in the S1/S4 vehicle in tank battalions and mechanized battalions of armored divisions, and in the S4 vehicle in infantry and mechanized battalions—these vehicles normally operate from the combat trains area.

8–3. Battalion Communications to Higher Headquarters

Communication facilities to higher headquarters normally existing in the battalions are discussed below:

a. Division Radio Nets (figs. 8–1, 8–2 and 8–3).

(1) *Division air request net—AM.* This net provides communication from the battalion to the division TASE. This net is used for traffic pertaining to air requests. The maneuver battalion enters this net only when operating as a separate battalion not under control of a brigade or when it becomes necessary to submit air requests. When operating as a battalion under brigade or attached to a brigade, the battalion normally will not enter this net. Primarily this net is used for preplanned air requests but it may be used by the TACP for immediate air requests if a separate Air Force air request net is not established or functioning.

(2) *Division warning broadcast net—AM.* Information received includes alerts, warnings, and CBR data.

(3) *Army spot report receiver net UHF.* Function of this net is explained in paragraph 6–16. Battalion operates a monitoring station only.

b. Air Force Radio Nets. The TACP at battalion maintains radio stations in the Air Force air request net for immediate air support and the tactical air direction net. Refer to chapter 4. Present Army TOE provide an air control team to provide the necessary communications service.

c. Brigade Radio Nets.

(1) *Brigade RATT net.* The battalion operates a station in this net to receive orders and information from brigade. Reports of both an operational and administrative nature are transmitted as required. In addition, the brigade trains may operate a station in this net for logistical traffic.

(2) *Brigade command net—FM.* This net provides battalion headquarters with voice contact to brigade headquarters. Primarily, the net is used for the transmission of tactical information.

(3) *Brigade administrative-logistics net—FM.* This net provides communication among elements of the battalion and the various support elements located in the brigade field trains area. The battalion S1/S4 sections coordinate combat service support with brigade S1/S4 sections but deal directly with the division combat service support elements. This net will be used to assist the brigade S4 when the brigade trains are displacing and enhance control and security in the brigade trains area.

(4) *Brigade intelligence net—FM.* The S2 operates a station in this net for the exchange of intelligence data with the brigade intelligence officer. This net is shown in fig. 7–1.

d. Wire Communications. When permitted by the tactical situation, the brigade communication platoon will install wire to the combat maneuver battalion command posts. This provides the battalion with entry into the division communication system through the brigade switchboard.

8–4. Internal Battalion Communications

a. General. Radio is the most frequently used means of communication within the battalion. However, when permitted by the tactical situation or the desires of the commander, a wire system is installed internally within the command post and externally to subordinate units. Wire will be less frequently used in tank and mechanized battalions than in infantry battalions. A wire system may be installed within the command post and to sub-

ordinate units when it is anticipated that the battalion will remain in a static situation for a period sufficient to complete installation and gain utilization of the system. The decision to establish wire communications will depend on the need, time available, supply of wire, and future requirements for the system. The battalion communication platoon will tie subordinate elements into the switchboard. Mounted and dismounted messenger service to subordinate elements may be provided where feasible. Personnel of the battalion are trained in the use of sound and visual signals.

b. Radio Nets (figs. 8–1, 8–2 and 8–3).

(1) *Battalion command net—FM.* This net provides immediate voice communications for the battalion commander, his staff, and attached and supporting elements. Vehicular and portable sets make this net flexible and responsive to command requirements. Traffic includes tactical orders, coordination, and intelligence. The net control station, normally in the battalion command post operations vehicle, includes a ground-plane antenna to increase transmission range.

(2) *Battalion administrative-logistical net —FM.* NCS for this net is located in the S1/S4 vehicle, and the traffic passed is of mutual interest to both these staff officers. Other staff officers and service company radio stations operate in this net as required. If the range is not excessive, the net will afford communications between S4 and the battalion trains.

(3) *Battalion surveillance net—FM.* This net is established by the S2 as required, and is used for the transmission of reports and intructions between the S2 and the battalion ground surveillance section. The NCS station is located in the vehicle of the surveillance section sergeant.

(4) *Antitank platoon command net— FM.* This net provides for the internal command and control of the antitank platoon, which is organic to the infantry and mechanized battalions (figs. 8–2 and 8–3). (The tank battalion has no antitank platoon.) The platoon leader, who maintains a station in the battalion command net, is the NCS of the antitank platoon command net.

(5) *Battalion mortar platoon fire direction net—FM.* This radio net is used for internal fire direction of the heavy mortar platoon of the battalion. The fire direction center (FDC) of the platoon also maintains FM radio contact with the FDC of the direct support artillery battalion and with the maneuver battalion commander through the battalion command net. NCS is located at the FDC of the platoon.

(6) *Battalion Scout or Reconnaissance Platoon Command Net—FM.* This radio net is used for internal control of the tactical operations of the battalion reconnaissance or scout platoon (scout platoon in tank and mechanized battalions, reconnaissance platoon in the infantry battalion). The NCS of this net is in the platoon leader's vehicle; the platoon leader also maintains contact with the battalion commander and his staff (especially S2 and S3) through the battalion command net.

(7) *Battalion Air Defense Section Command Net—FM.* This radio net is used for internal control of the tactical employment and fire control of the battalion air defense section. NCS is in the section leader's vehicle. The section leader also maintains contact with the battalion commander and maintains a monitoring receiver in the division warning broadcast net.

c. Wire System. Figures 8–4 and 8–5 illustrate the wire systems of the tank, infantry, and mechanized battalions of the ground-type divisions. Normally, the mechanized and tank battalions will employ wire less extensively than the infantry battalion. The battalion switchboard should be located away from the hub of CP activity in the general direction of forward elements. Note that the illustrations cited also include the FDC wire system of the battalion heavy mortar platoon.

d. Messenger. Battalion headquarters employs special messengers as required to maintain contact with higher headquarters. Scheduled messengers from brigade pick up and deliver materials at the battalion message centers; battalion messengers carry dispatches to the companies, either on schedule or as required.

Figure 8-1. Type radio nets, tank battalion.
(Located in back of manual)

Figure 8-2. Type radio nets, infantry battalion.
(Located in back of manual)

Figure 8-3. Type radio nets, mechanized battalion.
(Located in back of manual)

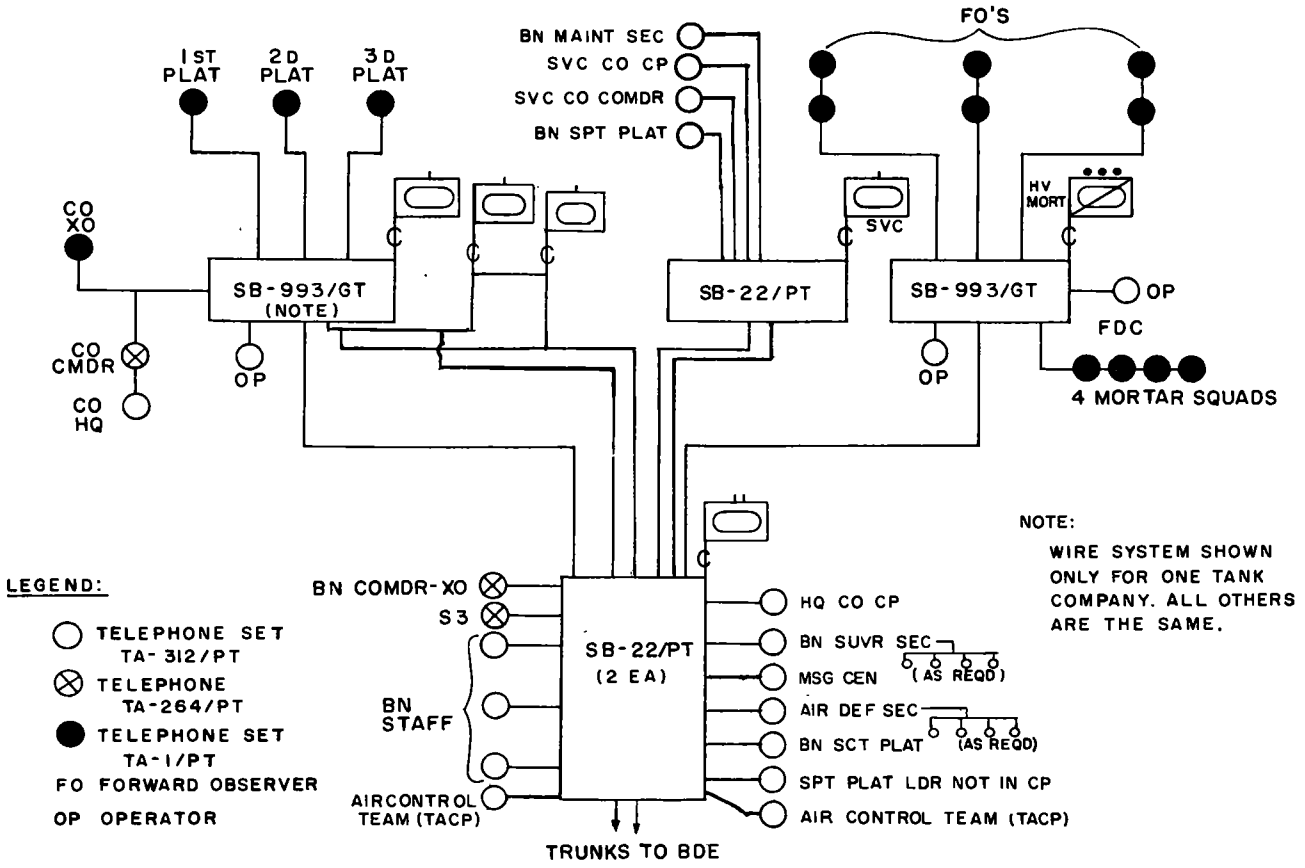


Figure 8-4. Type wire system, tank battalion.

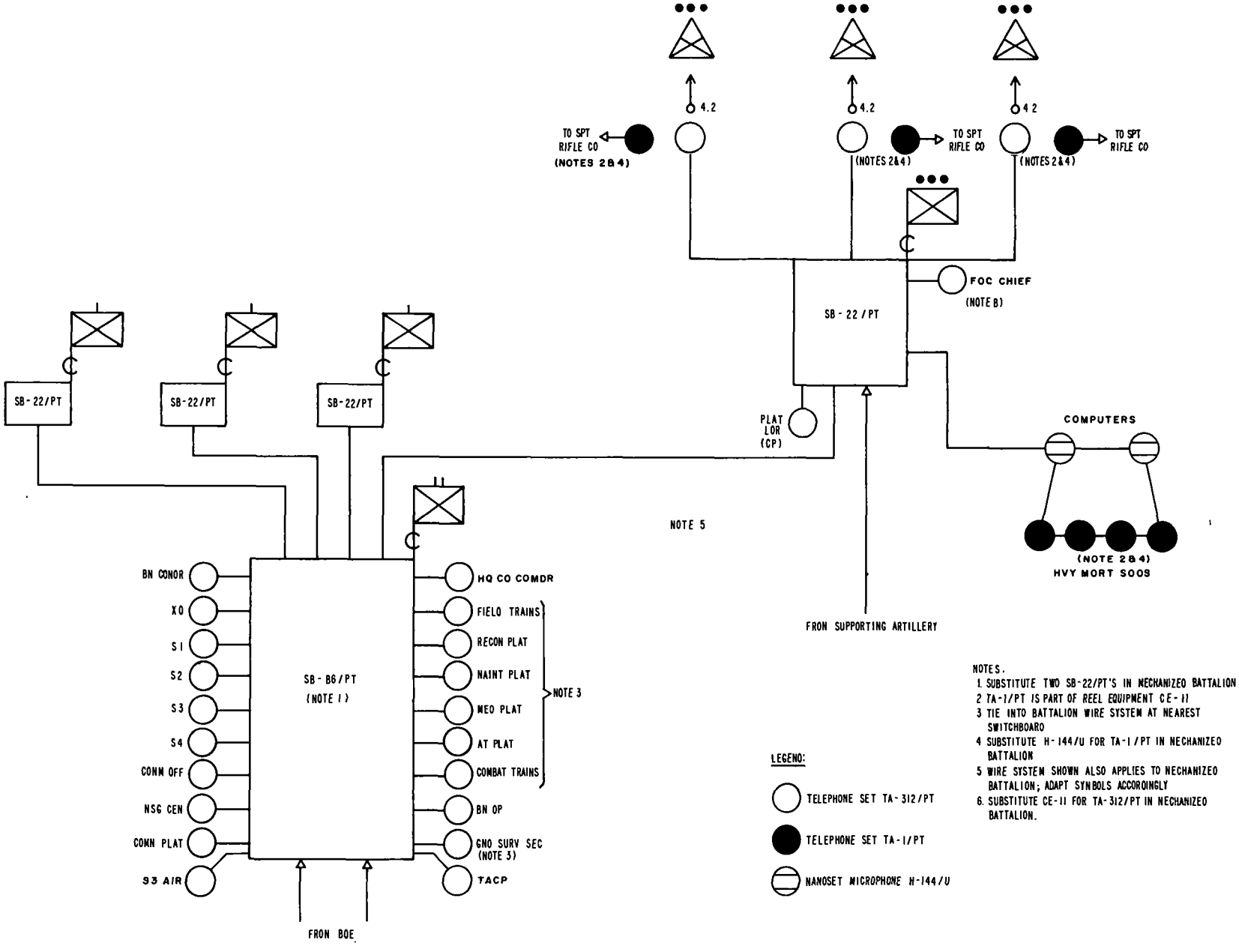


Figure 8–5. Type wire system, infantry battalion (or mechanized battalion).

8-5. Battalion Communication Platoon

a. General. The communication platoon of a tank, infantry, or mechanized battalion is organic to the battalion headquarters and headquarters company. This platoon is organized and equipped to install, operate, and supervise the internal battalion communication system and to extend this system to all organic and attached elements of the battalion, as required. Specialists of the platoon are organized as required, to fulfill the battalion communication requirements.

b. Mission. The communication platoon provides the following services for the battalion.

(1) Supervision of the internal communication system of the battalion.

(2) Installation, operation, and maintenance of the wire communications within the battalion headquarters and extension of this system, where required, to subordinate elements of the battalion.

(3) Operation of ground-to-air visual communications in the command post and trains area of the battalion.

(4) Operation and maintenance of AM radio sets in the unit headquarters elements.

(5) Provision of message center services includes messengers, cryptography, and maintenance of files, records, and reports.

(6) Provision of organizational maintenance of communications-electronics equipment within established limitations.

(7) Preparation, maintenance, and distribution of signal orders, instructions, and SOI extracts.

c. Duties of Personnel.

(1) *Communication officer.* The communication officer (COMMO) serves on the battalion staff and in addition is the platoon leader of the battalion communication platoon. At battalion level, the battalion COMMO performs duties similar to those described in paragraph 2-6.

(2) *Communication chief.* The battalion communication chief serves as the principal assistant to the battalion COMMO. At battalion level, the communication chief performs duties similar to those described in paragraph 2-7.

(3) *Other personnel.* Other personnel of the battalion communication platoon include specialists in message center, wire, and radio in addition to radio and radar mechanics. Refer to paragraph 2-8 for typical duties.

Section II. COMMUNICATIONS, TANK, INFANTRY, RIFLE, AND MECHANIZED RIFLE COMPANIES

8-6. General

a. The paragraphs that follow will apply to communications in the rifle company, mechanized rifle company, and tank company of ground-type divisions.

b. Company communications facilities must provide contact with higher headquarters and supporting units in addition to command and control of all organic and attached elements.

c. Basically FM voice radio sets provide the primary mobile means of communications at company level. Wire and messenger (both foot and motor) are also utilized where time and the tactical situation permit.

8-7. Communications to Higher Headquarters, Rifle and Tank Companies

a. Radio (figs. 8-6, 8-7 and 8-8).

(1) *Battalion command net—FM.* The company station in this net is located in the company commander's vehicle.

(2) *Battalion logistical or battalion administrative logistical net—FM.* The company station is normally located in the executive officer's vehicle.

b. Wire. Normally, wire is laid from battalion headquarters to the company switchboard. Mechanized rifle and tank companies will employ wire less extensively than infantry rifle companies.

8-8. Internal Company Communications

a. Radio (figs. 8-6, 8-7 and 8-8).

(1) *Company command net—FM.* This net is primarily established for the tactical command and control of all organic, attached, and supported units. Secondarily, the net may also be used for administrative-logistical type

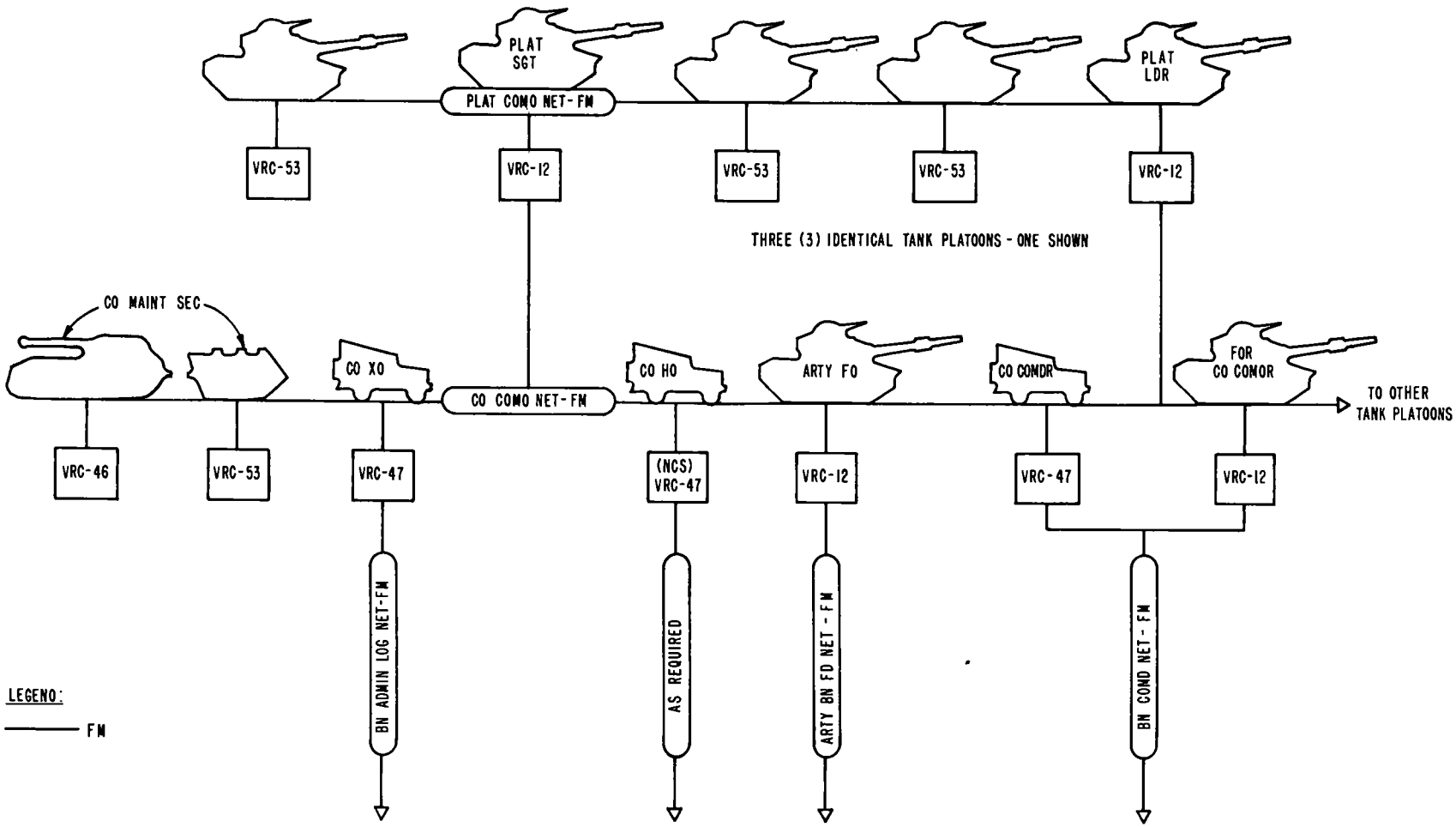
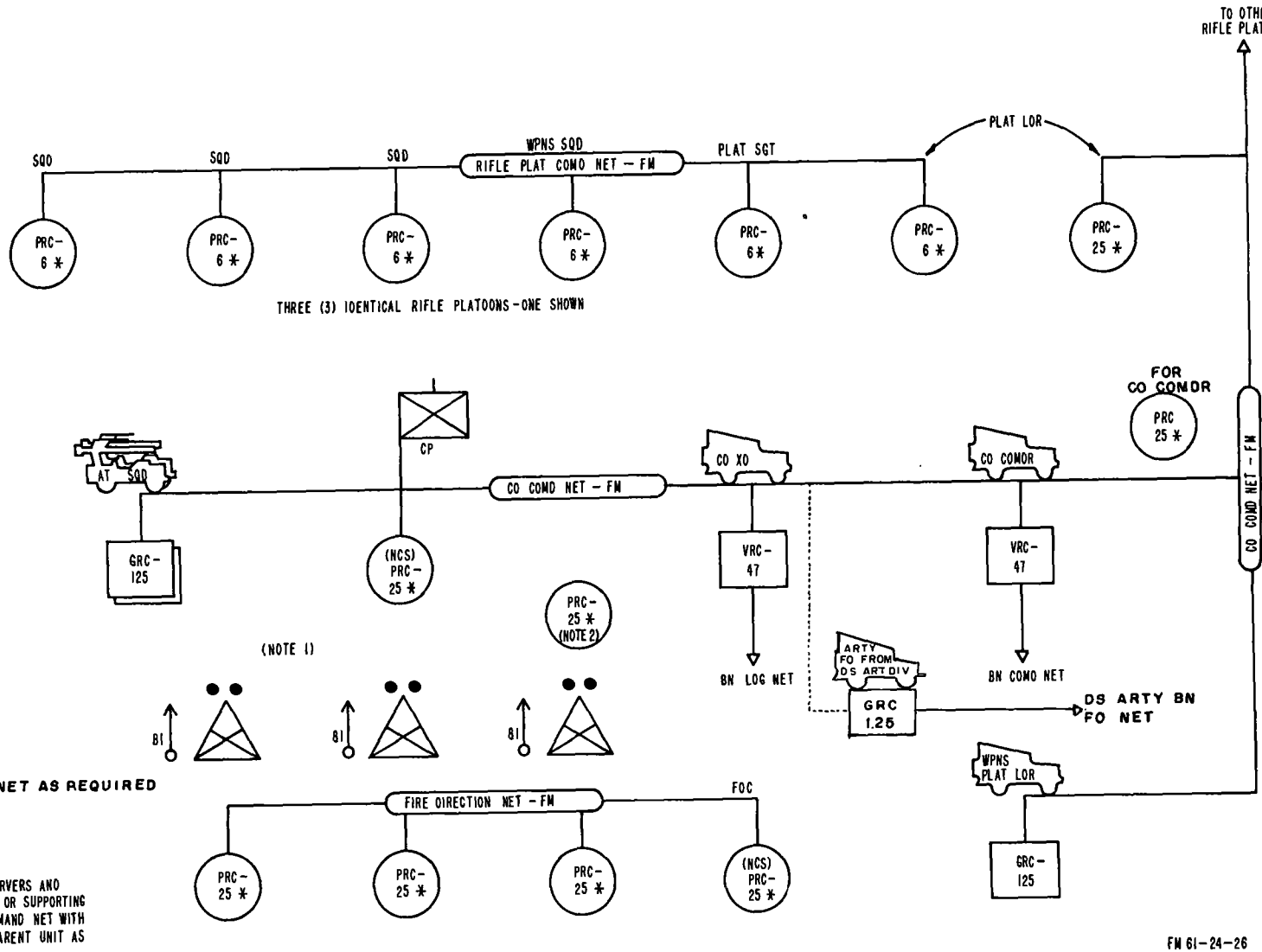


Figure 8–6. Type radio nets, tank company.



LEGEND:

..... ENTER NET AS REQUIRED

——— FM

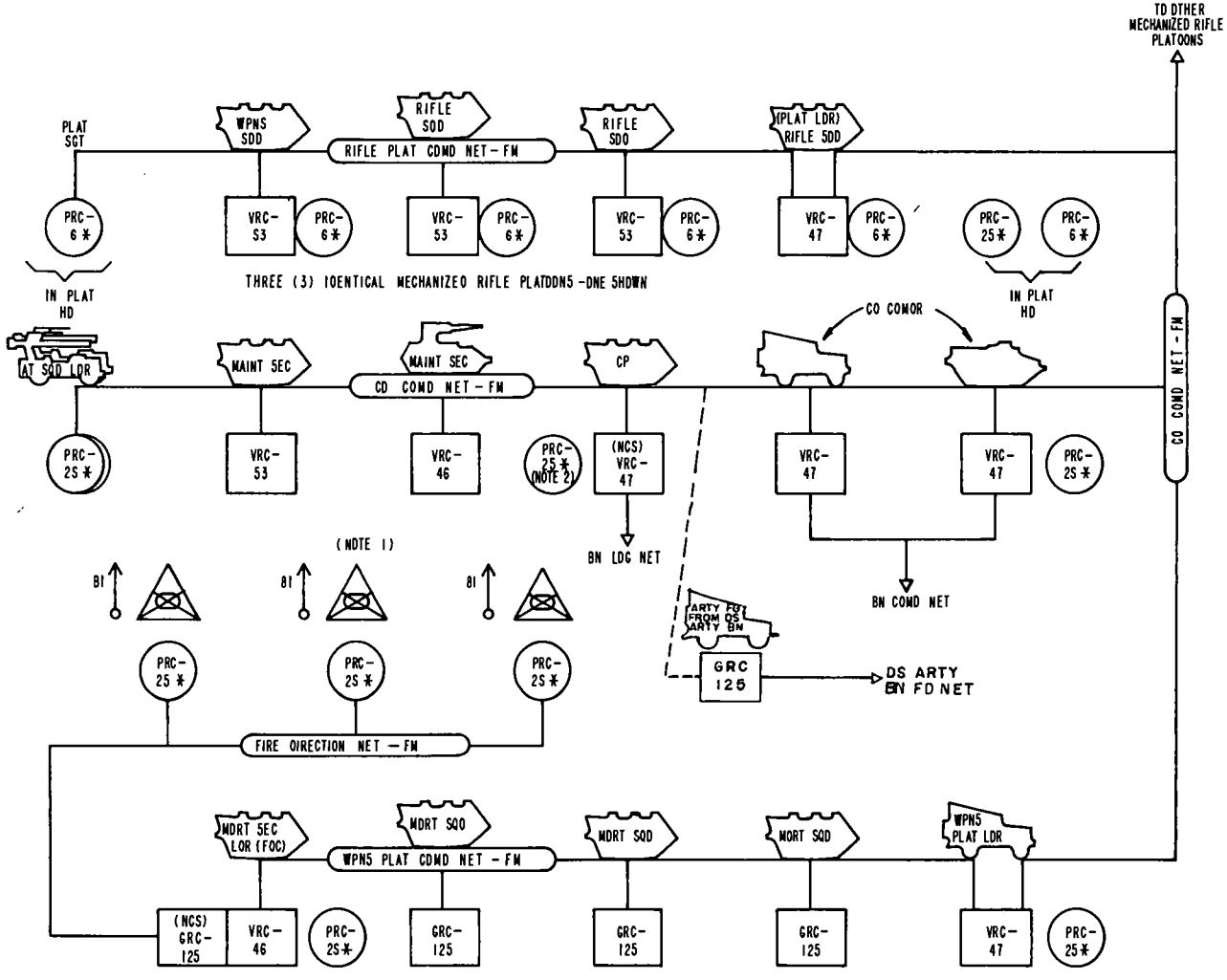
* DISMOUNTED OPERATION

NOTES:

1.- MORTAR FORWARD OBSERVERS AND LEADERS OF ATTACHED OR SUPPORTING UNITS MAY ENTER COMMAND NET WITH RADIOS PROVIDED BY PARENT UNIT AS REQUIRED.

2.- MULTI-USE SET TO PROVIDE REQUIRED FLEXIBILITY IN COMPANY. TYPICAL USES FOLLOW. SECOND RADIO FOR COMPANY COMMANDER; OBSERVATION POSTS; PATROLS; ROAD BLOCKS; CHECK POINTS; REPLACEMENT; AND COMBAT OUTPOST LINES.

Figure 8-7. Type radio nets, infantry rifle company.



LEGEND:

..... ENTER NET AS REQUIRED

——— FM

* DISMOUNTED OPERATION

NOTES

1 - MORTAR FORWARD OBSERVERS AND LEADERS OF ATTACHED OR SUPPORTING UNITS MAY ENTER COMPANY NET WITH RADIOS PROVIDED BY PARENT UNIT AS REQUIRED

2.- MULTI-USE SET PROVIDES REQUIRED FLEXIBILITY IN COMPANY. TYPICAL USES FOLLOW: SECOND RADIO FOR COMPANY COMMANDER, OBSERVATION POSTS; PATROLS; ROAD BLOCKS; CHECK POINTS; REPLACEMENT; AND COMBAT OUTPOST LINES.

Figure 8-8. Type radio nets, mechanized rifle company.

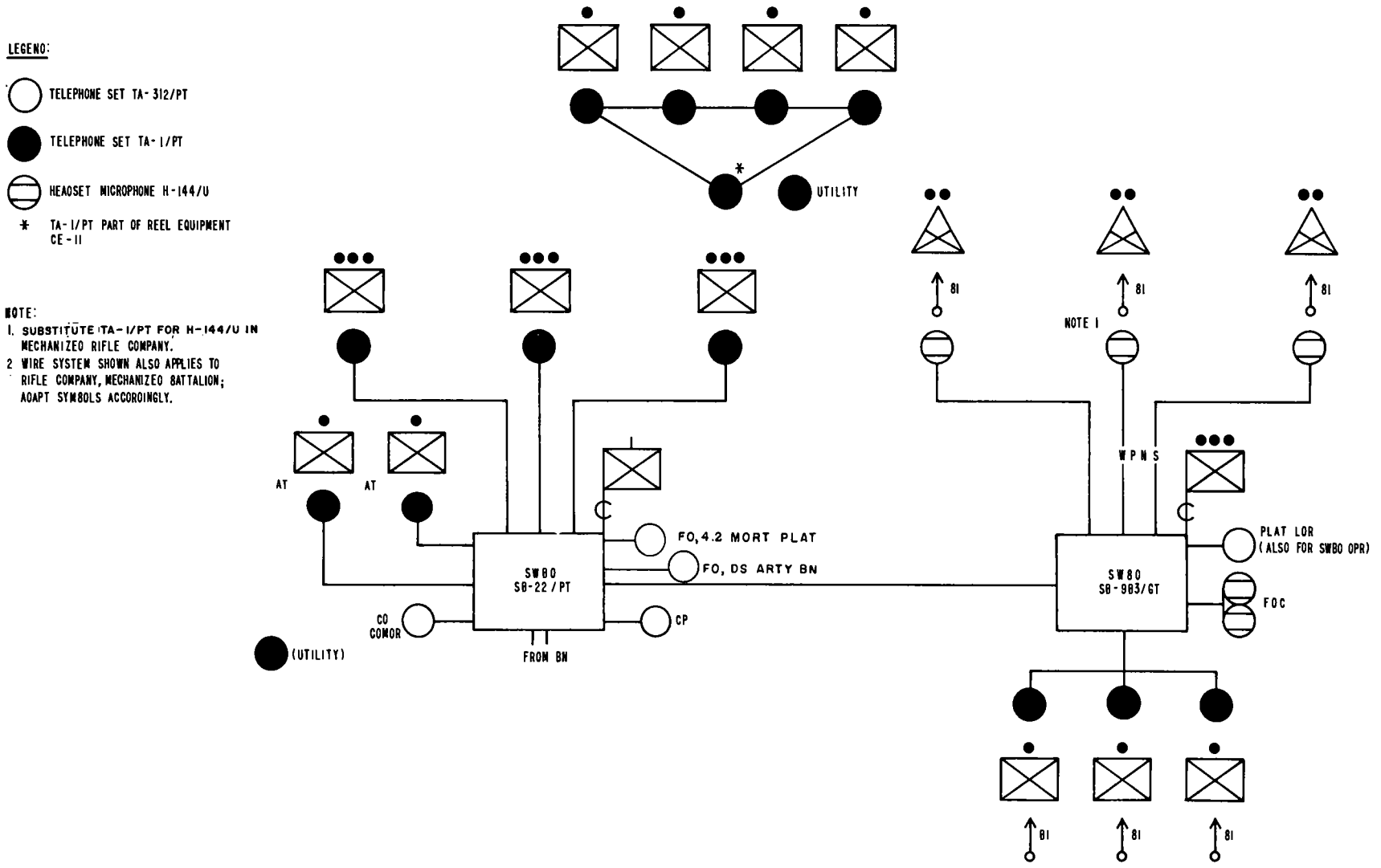


Figure 8–9. Type wire system, infantry rifle company.

of traffic. NCS is normally located at company CP.

(2) *Platoon command net—FM.* The rifle platoons and the tank platoons use this net for tactical control of platoon operations. Normally, the platoon leader's station will serve as NCS.

(3) *Fire direction net—FM.* The infantry and mechanized rifle companies maintain this net for mortar fire direction. NCS is at the FDC.

b. Wire (figs. 8–4 and 8–9). Sufficient wire equipment is authorized in the companies to permit the installation of battery or sound-powered telephone systems which terminate at the company switchboards. In certain situations, company communication specialists may require assistance from available personnel in installing, operating, and maintaining the company wire system. The use of wire in the tank and mechanized companies is usually at a minimum. Figure 8–9 shows the wire system of the infantry rifle company, which is adaptable to the mechanized rifle company. Refer to figure 8–4 for a type wire system of a tank company.

c. Sound and Visual Signals. Sound and visual signals are a primary means of communications used by squad leaders to control squad operations. These signals are employed as prescribed by the unit SOP, FM 21–60, and the SOI of higher headquarters.

8–9. Communications Personnel

An enlisted communication chief is assigned to each company headquarters for technical overall assistance in communications. Additional authorized communication specialists are assigned by TOE specification to operating company elements. These specialists may include radio mechanics, radio telephone operators, and wiremen. Their general duties are similar to those performed by their counterparts in brigade and battalion communication platoons.

CHAPTER 9

ARMORED CAVALRY SQUADRON COMMUNICATIONS, ARMORED, INFANTRY, OR MECHANIZED DIVISION

Section I. SQUADRON HEADQUARTERS COMMUNICATIONS

9–1. General

a. Organization. An armored cavalry squadron is organic to each armored, infantry, and mechanized division. The squadron is composed of a headquarters and headquarters troop, three armored cavalry troops, and an air cavalry troop. Refer to TOE 17–105.

b. Missions. The armored cavalry squadron performs three types of missions—reconnaissance, security, and economy; that is, the squadron will provide security and perform reconnaissance for the division or unit to which attached, and engage in offensive, defensive, and delaying action as an economy of force unit. Refer to FM 17–36 for more complete information on squadron operations.

9–2. Importance of Radio Communications

Radio is the primary means of communications in the armored cavalry squadron. The tactical mission of the squadron requires that communications be maintained to both higher and lower divisional elements which are often separated by considerable distances. Frequently the employment of continuous wave (CW) transmissions will be required to achieve maximum transmission range and operating capability.

9–3. Squadron Communications to Higher Headquarters

a. Radio Nets.

(1) When operating under division control, the cavalry squadron will operate in the following radio nets (fig. 9–1):

(*a*) Division CG/command net–FM.

(*b*) *Division RATT net No. 1* (*operations-intelligence*). This station will operate in the brigade RATT net when the squadron is attached to the brigade in an operation.

(*c*) *Division RATT net No. 2* (*administrative-logistics*).

(*d*) *Division air request net—AM.*

(*e*) *Division warning broadcast net—AM.* (The squadron may be authorized to broadcast intelligence information over this net by using a radio set that normally operates in another net.)

(*f*) *Spot report receiver system—UHF.* This net is monitored by the squadron S3 air.

(2) When attached to another headquarters, such as brigade, the cavalry squadron enters the appropriate command and administrative-logistical nets of the particular headquarters.

(3) A command post vehicle and truck mounted UHF ground-to-air AM radio sets are provided for use by the supporting forward air controller (of the TACP) in the *tactical air direction net UHF.* The TACP also operates in the Air Force air request net (AM-voice) for immediate air requests. Refer to chapter 4.

(4) When not used for tactical air direction ((3) above), the squadron UHF station may be employed in an army spot report receiver system.

b. Wire. As necessary, the squadron will be connected to the division area communications system through facilities provided by the division signal battalion.

c. Other Means of Communication. Organic motor messengers are used as required for the delivery of messages to higher headquarters. Visual and sound signals may be employed in accordance with instructions contained in the unit SOP, SOI of higher headquarters, and FM 21–60. Air messenger may also be used.

9–4. Cavalry Squadron Internal Communications

a. Radio Nets (fig. 9–1). The cavalry squadron operates FM and AM radio nets for command control of organic, attached, and supporting units. The following radio nets are employed at squadron level:

(1) *Squadron command net—FM.* This net provides the squadron commander, his staff, and troop commanders with immediate voice communication. Attached and supporting units will enter this net as required.

Figure 9–1. Type radio nets, armored cavalry squadron, armored, infantry, or mechanized division.

(Located in back of manual)

(2) *Squadron command net—AM.* The squadron uses this net for radio contact over

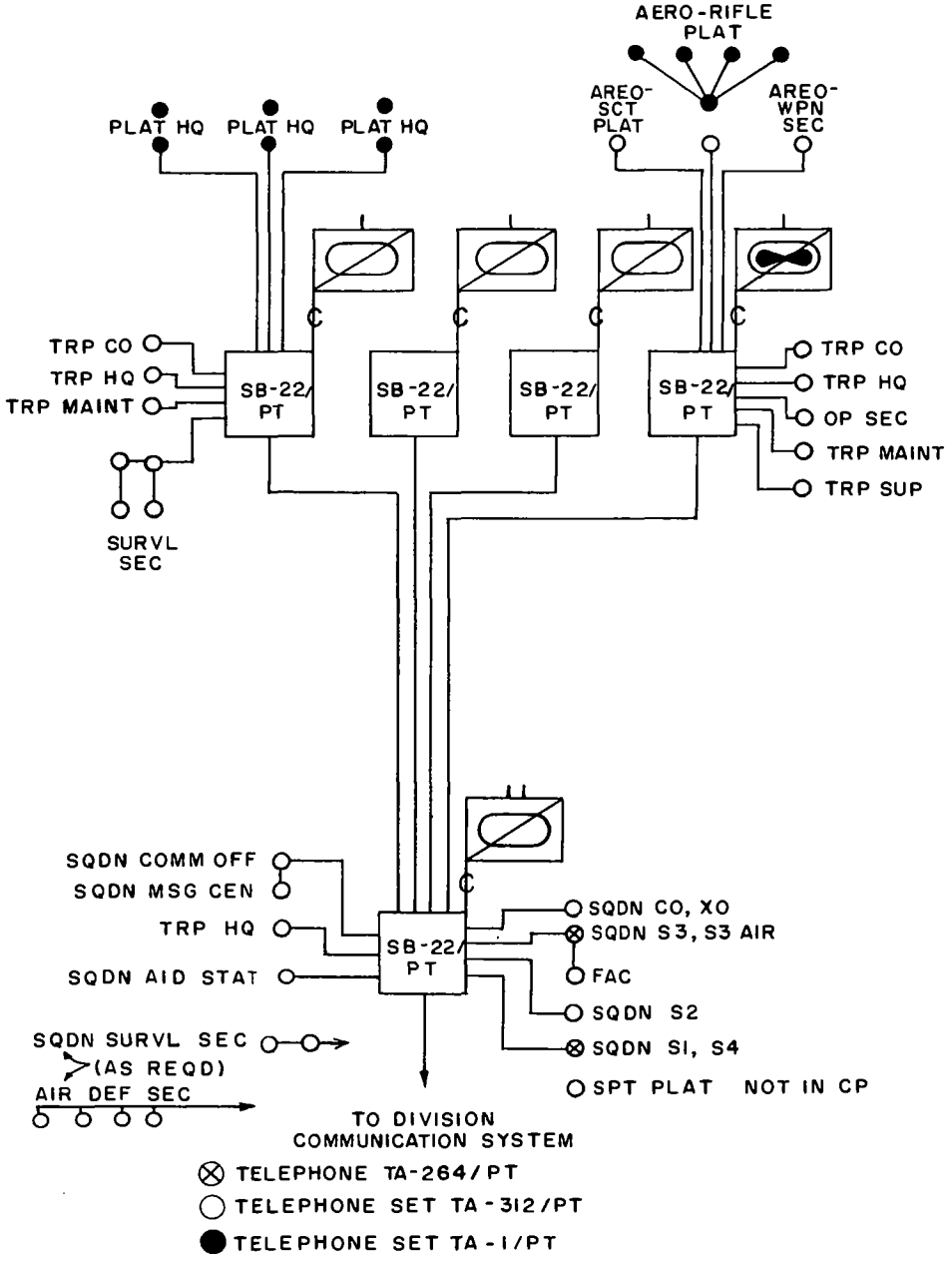


Figure 9–2. Type wire system, armored cavalry squadron, armored, infantry, or mechanized division.

extended distances with troop headquarters, liaison officers at higher headquarters, and logistical personnel in the trains area. The NCS for this net is normally located in the command post vehicle of the operations section.

(3) *Squadron intelligence net—FM.* This net is operated by the squadron S2 for intelligence traffic and for control of the squadron surveillance system. Other elements may enter this net as required.

(4) *Squadron administrative-logistics net—FM.* This net is operated by the squadron S1 and S4 for the function indicated. NCS is in the S1–S4 vehicle.

(5) *Air defense section command net—FM.* This net is used for internal command and control of section operations.

b. Wire. The wire system of the armored cavalry squadron is installed and operated by the squadron communications platoon. This system is installed when time and the tactical situation permit. Primarily the squadron wire system is used for internal communications within the CP in defensive or stabilized operations and in assembly areas during periods of radio silence.

(1) Wire lines may be installed to each organic troops and attached unit.

(2) Lateral wire lines are installed to adjacent units, where possible, to increase communication flexibility.

(3) Wires from supporting units are integrated into the squadron wire system.

(4) Wire communications to higher headquarters, when used, normally will be available through the division communications system.

c. Other Means of Communication. Mounted and dismounted messenger service is provided as required. The squadron SOP should outline the use of sound and visual signals, and communications personnel should be trained in the use of these alternate means of communication.

9–5. Squadron Communication Platoon

a. General. The headquarters and headquarters troop of the armored cavalry squadron has an organic communication platoon commanded by the squadron communication officer.

b. Platoon Functions. The functions of the communications platoon and the duties of the squadron communications officer are similar to those already discussed (ch 2). However, the squadron has a more extensive capability than the maneuver battalions for communications to both higher and lower headquarters.

Section II. COMMUNICATIONS IN THE ARMORED CAVALRY TROOP

9–6. Type Radio Nets
(fig. 9–3)

a. Troop Nets. The armored cavalry troop operates the following FM radio nets for internal command and control of troop elements. These nets are—

(1) *Troop command net—FM.*

(2) *Platoon command net—FM.* Each armored cavalry platoon operates a separate platoon command net.

b. Higher Headquarters Nets. The troop is also authorized FM and AM radio sets to operate in the nets of the armored cavalry squadron. The squadron nets in which these FM and AM radio sets operate are—

(1) *Squadron command net—FM.*

(2) *Squadron command net—AM.*

(3) *Squadron intelligence net—FM.*

(4) *Squadron administrative/logistical net—FM.* The squadron intelligence net may be entered by appropriate troop operators as required upon receipt of approval to leave their normal net.

Figure 9–3. Type radio nets, armored cavalry troop, armored cavalry squadron, armored, infantry or mechanized division.

(Located in back of manual)

9–7. Type Wire System

Because of the type of tactical missions assigned the armored cavalry troop, there is little opportunity to use wire. However, when time and the tactical situation permit, such as in an assembly area, or in a static situation, wire may be used to advantage. When used, the troop wire net is installed, maintained, and operated under supervision of troop communication specialists. Figure 9–1 shows a

typical armored cavalry troop wire net as part of the armored cavalry squadron wire system.

9-8. Other Means of Communication

a. Messenger. Although no messengers are authorized by the TOE, selected individuals are used as foot or motor messengers as required.

b. Sound and Visual. Prearranged sound and visual signals are employed principally for local warnings and control.

9-9. Armored Cavalry Troop Communication Personnel

The armored cavalry troop is authorized a communication chief, radio operators, radio mechanics, and radar operators. For typical duties, refer to chapter 2.

Section III. COMMUNICATIONS IN THE AIR CAVALRY TROOP

9-10. Type Radio Nets (fig. 9-4)

a. Troop Nets. The air cavalry troop has organic ground and air FM radio equipment to furnish communication with, and control of, elements of the troop. The FM nets operated in the air cavalry troop are—

(1) Troop command net—FM.

(2) Aero-scout platoon command net—FM.

(3) Aero-rifle platoon command net—FM.

(4) Aero-weapons section command net—FM.

b. Higher Headquarters Nets. The troop also has organic ground and air FM and AM radio equipment to operate in higher headquarters nets. The nets to higher headquarters in which the air cavalry troop maintains stations are—

(1) Squadron command net—FM.

(2) Squadron command net—AM.

(3) Squadron administrative/logistical net—FM.

(4) Division warning broadcast net—AM.

c. Special Purpose Nets

(1) *Air traffic regulation net—UHF.* This net may be operated by division, corps, or army, and is used to coordinate air traffic within a specified area. Each helicopter is equipped with an AM-UHF radio to contact the troop operations section or a higher headquarters flight operations center (FOC). The troop operations section is provided with a vehicular-mounted ground-to-air AM-UHF radio for operation in this net.

(2) *Tactical air direction net—UHF.* The same ground-to-air radio mentioned above may be used when required by forward air controller operators to contact and direct tactical air support aircraft.

d. Other Nets. Each helicopter, when placed in support of a different unit, is able to monitor the supported unit's command net through the aircraft auxiliary FM receiver.

Figure 9-4. Type radio nets, air cavalry troop, armored cavalry squadron, armored, infantry, or mechanized division.

(Located in back of manual)

9-11. Type Wire Net

Use of wire in the air cavalry troop generally is limited to that installed in the command post under supervision of the troop communication specialists and to that laid by the aero-rifle platoon in dismounted operations. However, when time and the tactical situation permit, the wire communication system may be expanded within the capability of the authorized equipment. Figure 9-1 shows a typical air cavalry troop wire net as part of the armored cavalry squadron net.

9-12. Other Means of Communications

a. Messenger. Although no messengers are authorized by the table of organization and equipment, selected personnel are used as foot, motor, or air messengers as required to accomplish the troop mission.

b. Sound and Visual. In addition to the application of sound and visual communication previously mentioned, the air cavalry troop uses visual signals rather extensively in connection with aircraft control.

9–13. Air Cavalry Troop Communication Personnel

The air cavalry troop is authorized a communication chief, radio operators, and a radio mechanic. For typical duties, refer to chapter 2.

CHAPTER 10

DIVISION ARTILLERY COMMUNICATIONS FOR ARMORED, INFANTRY, AND MECHANIZED DIVISIONS

Section I. GENERAL INFORMATION

10–1. Composition of Division Artillery

Division artillery of an armored, infantry, or mechanized division consists of the following:

a. One headquarters and headquarters battery, division artillery.

b. Five field artillery battalions—three of which are normally used in direct support (DS), and two are normally used in general support (GS) or reinforcing missions. These battalions are assigned to the ground-type divisions as follows:

(1) Infantry division: three field artillery battalions (DS), 105mm towed; one field artillery battalion (GS), 155 mm (towed)/8 in (SP); and one field artillery battalion, Honest John (HJ), (GS).

(2) Armored or mechanized division; three field artillery battalions (DS), 155mm, self propelled (SP); one field artillery battalion (GS), 155mm/8 in. (SP); and one field artillery battalion, (HJ), (GS).

10–2. Organization for Communications

a. Each of the units listed above has an organic communications platoon and is authorized a communications officer. The division artillery communications officer and the division artillery communications platoon are organic to the division artillery headquarters and headquarters battery listed above. A battalion communication officer and the battalion communications platoon are organic to the headquarters, headquarters and service battery of the 105mm and 155mm/8-inch battalions and to the headquarters and headquarters battery of the Honest John and 155mm DS battalion. Battalion communication officers are staff officers and part of the battalion headquarters. Note that battalion communication platoon of headquarters battery is commanded by a platoon leader who has the additional duty of assistant battalion communication officer. Each firing battery is authorized a communications section and a communications chief. Duties of communications personnel are similar to those described in chapter 2.

b. For more complete details on artillery communications, refer to FM 6–10.

Section II. DIVISION ARTILLERY RADIO NETS AND WIRE SYSTEM

10–3. Division Artillery Radio Nets

The following radio nets are used by certain units of a division artillery depending on their organization, mission, and tactical employment:

a. Corps Artillery Fire Direction Net, AM (RATT) (F). The corps artillery fire direction net, AM, (fig. 10–1) provides a secure radio teletype link between the division artilleries and the corps artillery for requesting additional fire support and for the coordination of artillery fire support matters.

b. Corps Artillery Meteorological Net, AM (M). The corps artillery meteorological net (fig. 10–2) is used to coordinate radiosonde frequencies between the meteorological sections of the division artilleries and the target acquisition battalion. Division artilleries and the target acquisition battalion broadcast meteorological traffic by voice on a prearranged time schedule. Meteorological messages from the division artillery meteorological section are normally delivered to the division artillery fire direction center and sent out to user units over

the division artillery command/fire direction nets 1 and 2, AM, RATT (*l* and *m* below). The meteorological net is used as a "backup" net for the dissemination of meteorological messages.

c. Corps Artillery Survey Channel, FM (S). Corps artillery allocates one frequency for the use of all survey sections located in the corps area. It is not a formal net as there is no net control station. Its sole purpose is to provide surveyors with a means of exchanging information and coordinating survey.

d. Air Force Tactical Air Observation Net UHF (TAO). The tactical air observation (TAO) (fig. 10–1) net is an ultra high frequency Air Force net. Tactical, high-performance aircraft and artillery units may communicate over this net for adjusting long-range artillery fire or for surveillance of the effects of nuclear fires.

e. Division Command Net, FM. The division commanding general's command net, FM, (fig. 10–1) is intended primarily for communication between the division commander, his staff, and the commanders of major subordinate units. The division artillery commander, executive officer, and fire direction center operate radios in this net. Because of the number of radio stations operating in this net, it is not intended that it be used for lateral communication between subordinate commanders.

f. Division Operations/Intelligence Net, AM (RATT Net No. 1) (Op/Intel). The division operations/intelligence net (fig. 10–1) is used by the division artillery to receive command operational traffic from division. In addition, the net provides a radio teletype link between the division artillery and the major combat elements of the division. This net is also used for the exchange of information and intelligence with the division. It may be used for lateral communication between the division artillery and the major subordinate units of the division.

g. Division Administrative/Logistics Net, AM (RATT Net No. 2) (Admin/Log). The division establishes an administrative/logistics net, (fig. 10–1) for administrative and logistical traffic between the division headquarters and the service support elements of the division. Division artillery headquarters operate in this net on a full-time basis.

h. Division Warning Broadcast Net, AM. The division operates a warning net throughout the division area to broadcast warnings of air alerts; chemical, biological, and radiological attacks; nuclear strikes, fallout patterns, and similar information of an urgent operational nature. Division artillery operates a radio station in this net as it must broadcast all warnings pertaining to hostile aircraft received over the air defense intelligence net (*i* below). All other artillery units down to and including batteries monitor this net. Refer to figures 10–1, 10–3, 10–4, 10–7, and 10–9.

i. Air Defense Intelligence Net, AM (AD Intel). Division artillery maintains a monitoring receiver in the air defense intelligence net.

j. Time Signal Net, AM. The time signal net (fig. 10–1) is used to broadcast the official time throughout an entire theater of operations. The theater commander designates one station to broadcast the accurate time in accordance with a planned and published schedule.

k. Division Artillery Command/Fire Direction Net, FM (CF). The division artillery command/fire direction net, FM (fig. 10–1) is used primarily for communication with elements of the headquarters and Army aircraft. It is a multipurpose net used for command and administrative matters, tactical fire direction, collection of information, and dissemination of intelligence. Subordinate units operate in this net when they are within range of FM equipment.

l. Division Artillery Command/Fire Direction Net 1, AM (RATT) (CF 1). The division artillery command/fire direction net (fig. 10–1) is operated by division artillery to communicate with its direct support field artillery battalions and attached nonnuclear units. It is used to transmit tactical and administrative orders, fire missions, and meteorological messages to the battalions. The battalions use this net to request additional fire support from division artillery and to exchange information and intelligence. This net is not established in the airborne division artillery.

m. Division Artillery Command/Fire Direc-

tion Net 2, AM (RATT) (CF 2). The division artillery command/fire direction net 2 (fig. 10–1) is a radio teletype net used by the division artillery, the fire support coordination element (FSCE) of the division tactical operations center (DTOC), the organic general support cannon and missile organizations, and any attached nuclear-capable battalions to process fire missions. This net is also used for the transmission of command and administrative matters to the organic or attached units of the division artillery. Additional uses for this net are to exchange information and to disseminate intelligence and meteorological messages to the organic or attached nuclear units of division artillery. In the airborne division artillery, only that portion of the net between division artillery and the fire support coordination element (FSCE) of the division tactical operations center (DTOC) is established.

n. Battalion Command/Fire Direction Net, FM (CF). The battalion command/fire direction net, FM, is used for internal command and control of the battalion. This net provides a channel for radio communication for the battalion commander, his staff, battery commanders, sections of battalion headquarters, attached aircraft, and the firing battery headquarters. It may be used to transmit firing data if necessary. Refer to figures 10–3, 10–4, 10–7, and 10–9.

o. Battalion Fire Direction Nets 1, 2, and 3, FM (F1), (F2), and (F3). Artillery units with a mission of direct support require three FM nets to handle fire direction traffic. They are identified as fire direction nets 1 (F1), 2 (F2), and 3 (F3). They are used by the forward observers to transmit requests for fire to the battalion fire direction center and by the battalion and battery fire direction centers to process fire missions. Information gathered by the forward observers and liaison sections can also be processed over these nets. Operating in each net are the battalion fire direction center, one of the field artillery batteries, a liaison section with a maneuver battalion, and forward observers operating under the supervision of the direct support battalion liaison officer. When a particular operation requires more than three liaison officers, the additional liaison officers and their forward observers will have to operate in a fire direction net being used by some other liaison section. The liaison section operating at the supported brigade headquarters normally operates in the battalion command/fire direction net. Refer to figures 10–3 and 10–4.

p. Battalion Fire Direction Net, FM (F). Battalions performing a general support, reinforcing, or general support-reinforcing mission normally have only one fire direction net. It is identified as the battalion fire direction net, FM, and is used primarily for fire direction and fire control. It may also be used to collect information and disseminate intelligence. Refer to figures 10–7 and 10–9.

q. Supported Units Nets. Battalions performing a direct support mission operate in the nets listed (1) and (2) below.

(1) *Supported company command net, FM*. Each forward observer operates in the command net of the company he is supporting. This net provides a link between the forward observer and the company commander for coordination of fire support. Refer to figures 10–3 and 10–4.

(2) *Supported brigade command net, FM*. The battalion fire direction center operates in the supported brigade command net for coordination of fire support and exchange of information and intelligence. Refer to figures 10–3 and 10–4.

r. Reinforced Units Net. When assigned a mission of reinforcing or general support reinforcing, a field artillery battalion will answer calls for fire over the reinforced unit's command/fire direction net. Subsequently, the reinforcing battalion may be directed by the reinforced battalion to enter one of the fire direction nets as required by the situation (fig. 10–7).

Figure 10–1. Type radio nets, armored, infantry or mechanized division artillery (division artillery headquarters and headquarters battery).

(Located in back of manual)

10–4. Division Artillery Wire System (fig. 10–2)

The extent of the division artillery wire sys-

tem depends on the length of time a position is occupied. Priority wire lines are those used for conduct of fire. The wire system, where possible, will duplicate and supplement the radio nets of division artillery.

a. Installation of Division Artillery Wire System. Utilizing organic communication personnel and equipment, the division artillery units install the following wire circuits:

(1) The division artillery switchboard operators install two switchboards in the command post area. The first switchboard is located in the division artillery fire direction center and terminates those lines that are used for fire control, coordination, and the collection of information. The second switchboard is the division artillery command switchboard and is used primarily to process command and administrative traffic. Two switchboards are used to provide flexibility and greater reliability to the division artillery wire systems.

(2) Under the principle of superior to subordinate, division artillery is responsible for the installation of wire circuits to its organic and attached units. Division artillery has only a limited number of wire teams. The circuits actually installed by division artillery are those to the battalions that have a direct support mission and to the FA battalion Honest John. Division artillery normally retains one wire team to install wire communications within its command post. The priority circuits are from division artillery fire direction center switchboard to the fire direction center switchboard of each direct support battalion and rocket organization. As time permits, circuits for division artillery command switchboards to the command switchboard of each of these battalions are installed.

(3) A field artillery battalion not having a direct support mission, such as the composite battalion, and any attached units are normally directed to install the wire circuits from their fire direction center switchboards to the fire direction center switchboard in the division artillery. They also install the trunk circuits between the command switchboards.

(4) Under tactical missions of reinforcing or general support-reinforcing, the reinforcing artillery units install wire circuits from their fire direction center switchboards and command switchboards to the corresponding switchboards at division artillery.

(5) The division artillery command post wire team installs circuits between the division artillery fire direction center switchboard and command switchboard. It also installs local circuits as directed by the SOP.

(6) The surveillance radar section is normally directed to install a wire line to the nearest field artillery unit, the division artillery fire direction center switchboard, or to the nearest signal center of the division area communication system, whichever is closer.

b. Division Communication System. The division signal battalion installs and operates two multichannel radio terminals in the vicinity of the division artillery command post. These terminals provide 24 channels of communications with the division main command post and 12 channels with the division alternate command post. Allocated circuits from the 24-channel link between division main and division artillery are designated for corps artillery-to-division artillery purposes; strap-through is accomplished at division main into the corps command multichannel network. The multichannel radio facilities at division artillery will normally consist of two radio terminal sets connected into the division artillery command switchboard by division signal personnel. These terminals provide division artillery with communication, through the division system, to other elements of the division and to corps artillery as already described. The division communication system is used by division artillery to supplement its organic means of communication. Organic and attached units of division artillery connect into signal centers in their vicinity as time and distance permit. The division communication system is comprised mainly of common-user circuits; however, to meet special requirements, a specified number of sole-user circuits will be allocated. Normally, the division artillery requires two sole-user circuits between the division artillery headquarters and the fire support coordination element (FSCE) in the DTOC. Additional sole-user circuits are requested from the division signal officer, as

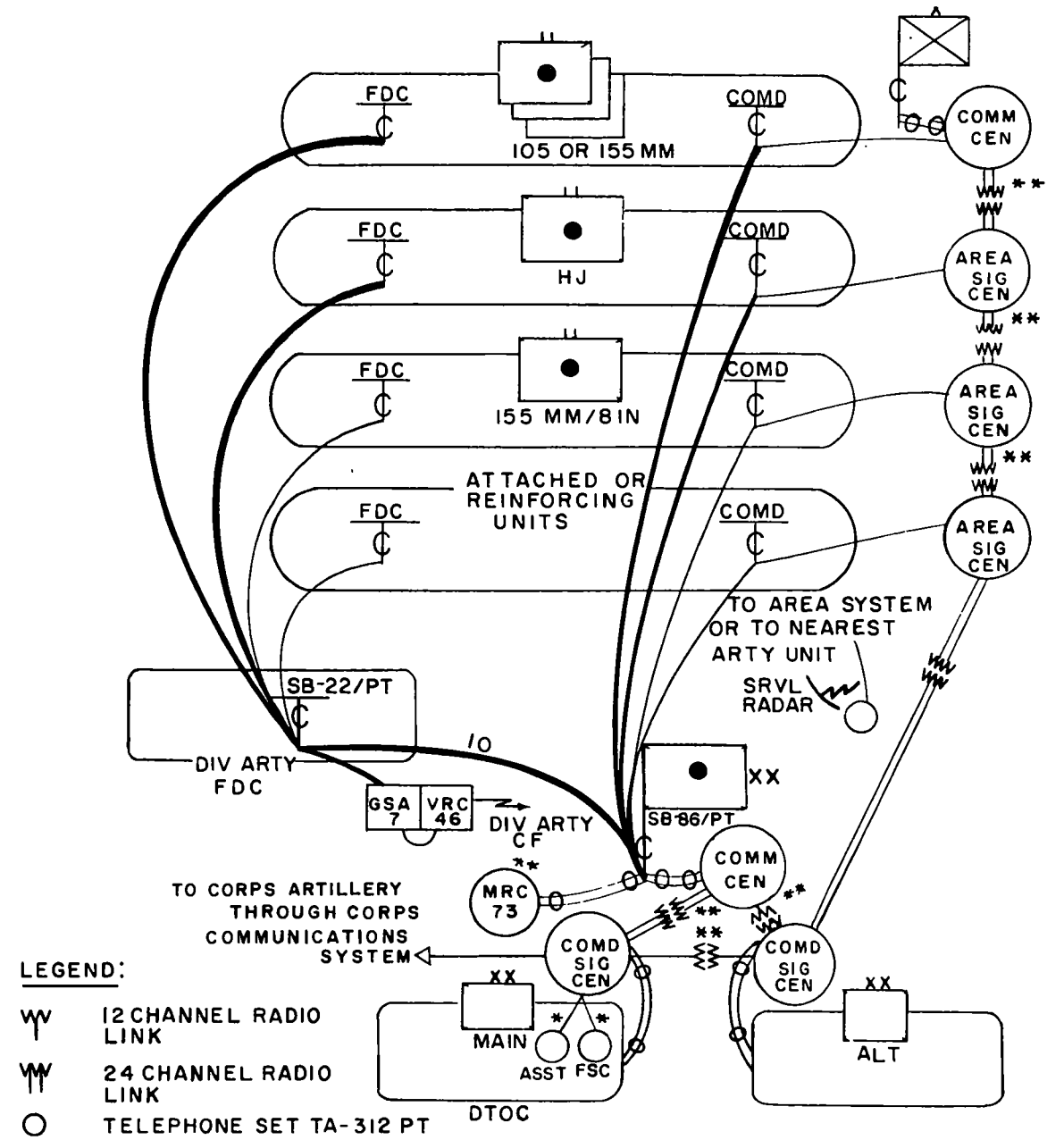


Figure 10–2. Type wire system, infantry, armored, or mechanized division artillery.

required. If division artillery and division alternate are adjacently located, multichannel links between these two headquarters may be provided by the division signal battalion over 26-pair cable with a consequent saving in a 12-channel radio link.

Section III. RADIO NETS AND WIRE SYSTEM, FIELD ARTILLERY BATTALIONS (DS), 105MM or 155MM

10–5. Field Artillery Battalion Radio Nets, 105mm or 155mm

a. Type battalion radio nets of a field artillery battalion (DS), 105mm, infantry division artillery, are shown in figure 10–3.

Figure 10–3. Type radio nets, field artillery battalion (DS), 105mm, infantry division artillery.

(Located in back of manual)

b. The battalion radio nets of a field artillery battalion (DS), 155mm, armored or mechanized division artillery, are shown in figure 10–4.

c. Refer to paragraph 10–3 for explanation of nets shown in figures 10–3 and 10–4.

10–6. Field Artillery Battalion (DS) Wire System, 105mm and 155mm (fig. 10–5)

The battalion wire system provides facilities for command and fire direction. Priority wire circuits are those necessary for conduct of fire and for communication with the supported unit.

a. Installation of Battalion Wire System. Utilizing organic wire personnel and equipment, the headquarters battery establishes the following circuits and installations:

(1) The battalion switchboard operators install and operate two switchboards within the command post area. One of these switchboards is located in the fire direction center and terminates the lines used for fire direction and the collection of information. The other switchboard is the battalion command switchboard and terminates the lines pertaining to command, administration, and logistics. The use of two switchboards within the command post area provides flexibility and greater reliability. Other switchboards are available within the command post for displacement or to supplement existing switchboards. Still others are installed by the firing batteries and by the liaison section with each maneuver battalion. Wire communication with the forward observers is maintained through the liaison officer switchboard.

(2) The wire teams of the headquarters and service battery install priority circuits from the fire direction center switchboard to the switchboard of each liaison officer with a committed maneuver battalion, and from the battalion command switchboard to the supported brigade switchboard. Time permitting, a second line is installed using an alternate route. If desired, a phantom circuit can be superimposed over the two circuits to the supported brigade for the use of the artillery liaison officer.

(3) As a minimum, two trunk circuits are installed between the command switchboard and the fire direction center switchboard. Local lines are installed from the command switchboard as indicated by the unit SOP.

(4) Lines from the liaison officers' switchboards to the forward observers are installed as directed by the liaison officer concerned. Normally, the liaison officers direct the forward observers to install the circuits; however, there may be times when the distance is so great that a headquarters battery wire team will have to install the circuits. Each forward observer installs a line from his location to the supported company switchboard.

(5) The battalion's countermortar radar section installs a wire line from its position to the battalion fire direction center switchboard.

(6) As soon as practicable, the battalion wire teams install a circuit from the battalion command switchboard to the nearest signal center of the division communications system.

(7) Division artillery is responsible for installing, and normally will install, a circuit

from the division artillery fire direction center and command switchboards to the battalion fire direction center and command switchboards.

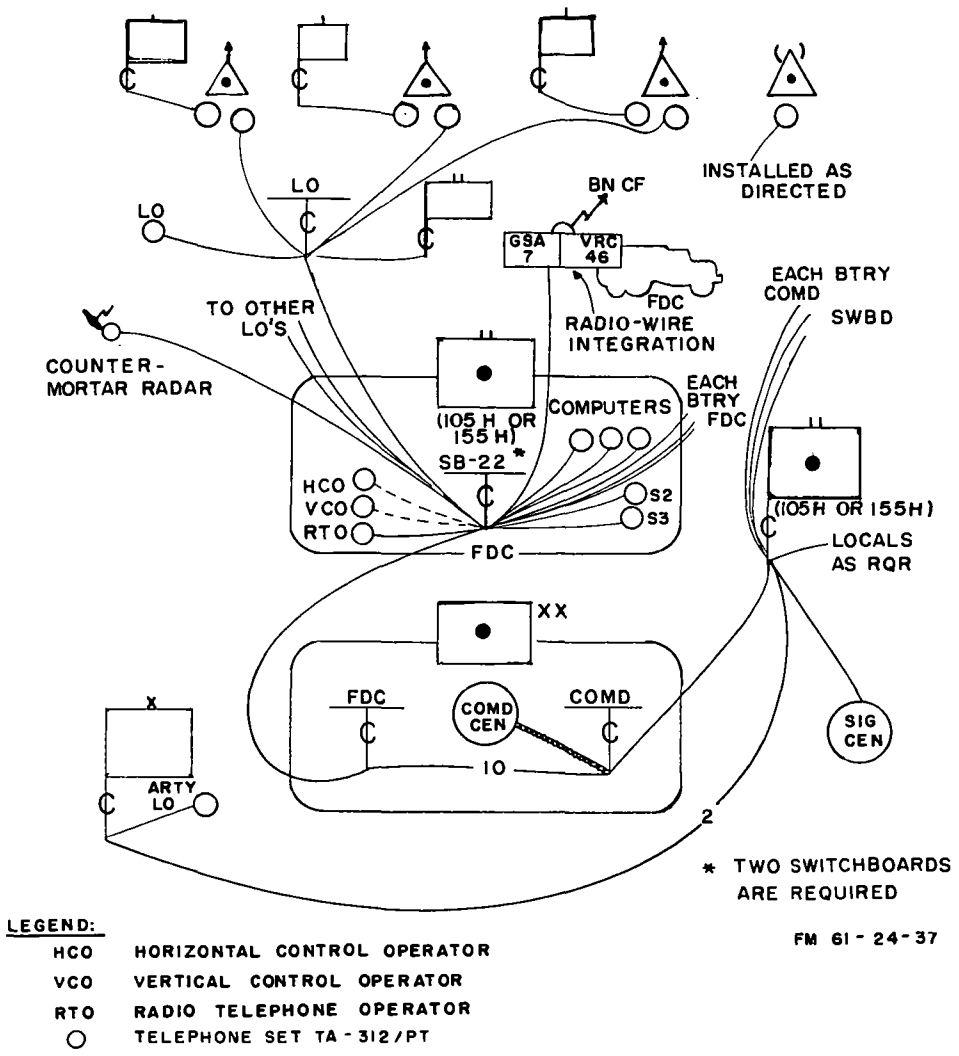


Figure 10–5. Type wire system, field artillery battalion (DS), 105mm or 155mm, infantry, armored, or mechanized division artillery.

b. Installation of the Firing Battery Wire System. The three firing batteries install identical wire systems (fig. 10–6). To facilitate rapid installation of wire within the battalion and to insure proper utilization of wire personnel, the batteries are habitually directed to install the wire circuit from each battery fire direction center to the battalion fire direction center. This is the priority wire circuit for each battery wire team. Each battery wire team also installs the line between the battery switchboard and the battalion command switchboard. Each howitzer section installs a line to the telephone connecting and switching group. The battery recorder will have a line from the telephone connecting and switching group to a position that will facilitate control of the battery by the battery executive officer. To expedite laying the battery, this telephone should have sufficient slack wire to permit it to be moved to the aiming circle if necessary. A bridge may be installed between the radiotelephone operator's phone and the fire direction computer's phone. This would permit fire commands to flow from the battalion FDC directly to the weapons.

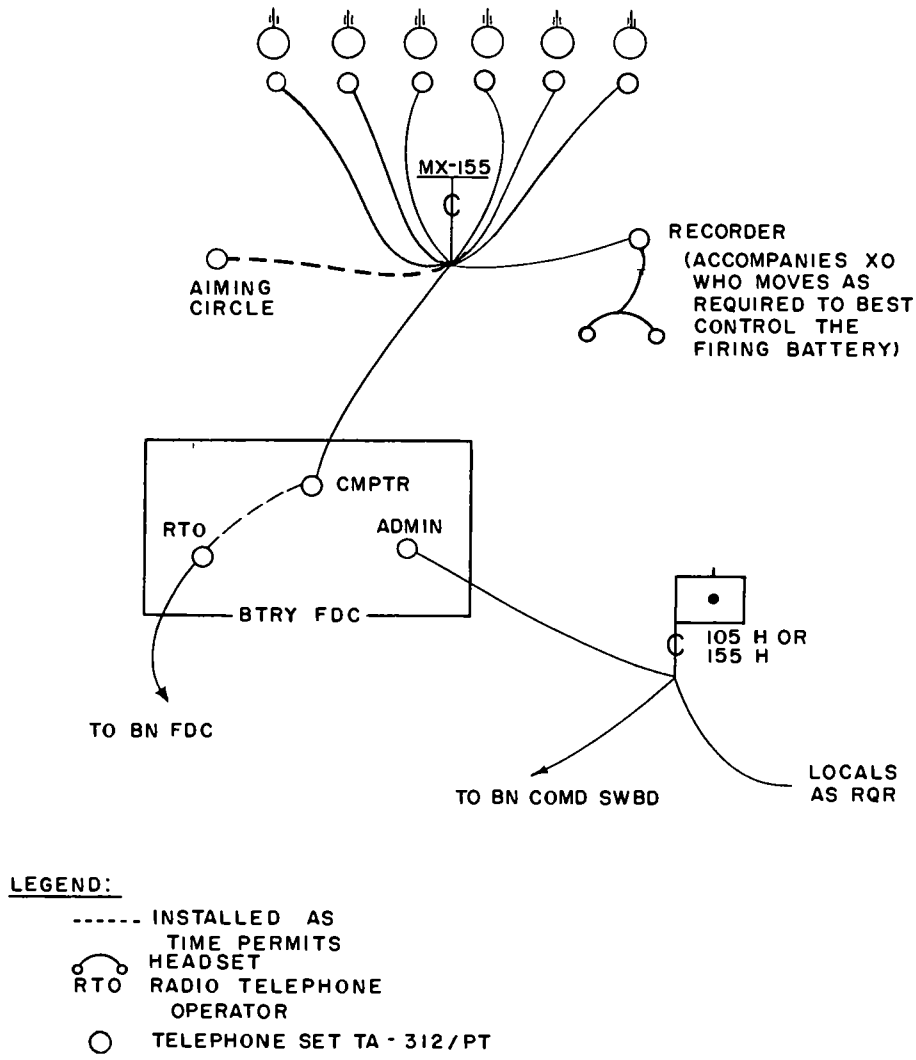


Figure 10–6. Type wire system, field artillery battery, 105mm or 155mm howitzer, armored, infantry, or mechanized division artillery.

Section IV. RADIO NETS AND WIRE SYSTEM, FIELD ARTILLERY BATTALION (GS), 155MM/8-INCH

10–7. Field Artillery Battalion (GS) Radio Nets, 155mm/8-inch

a. The battalion radio nets of a field artillery battalion (GS), 155mm/8-inch, are shown in figure 10–7. Note that the battery radio nets are also included in referenced figure.

Figure 10–7. Type radio nets, field artillery battalion (GS), 155mm/8-inch, armored, infantry, or mechanized division artillery.

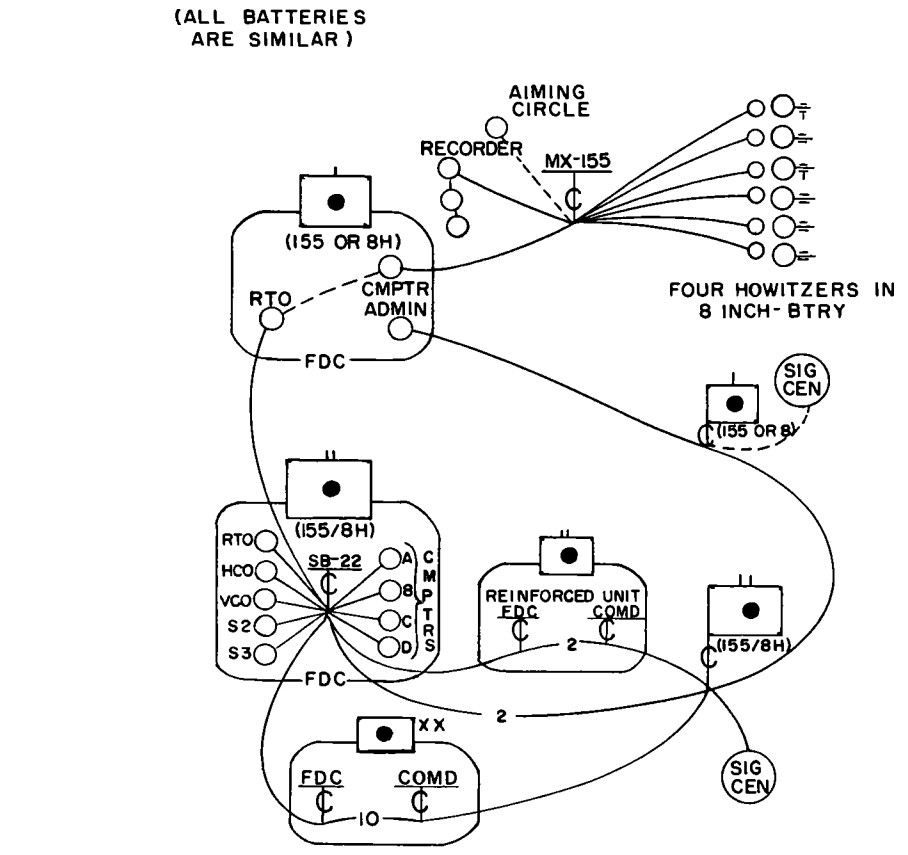
(Located in back of manual)

b. For explanation of radio nets, refer to paragraph 10–3.

10–8. Type Wire System, Field Artillery Battalion (GS), 155mm/8-inch, Infantry, Armored, and Mechanized Division Artillery

(fig. 10–8)

a. General. The battalion wire system must provide the telephone facilities to expedite command fire direction traffic. Priority cir-



LEGEND:

HCO	HORIZONTAL CONTROL OPERATOR
VCO	VERTICAL CONTROL OPERATOR
RTO	RADIO TELEPHONE OPERATOR
----	INSTALLED AS REQUIRED
○	TELEPHONE SET TA-312/PT

Figure 10–8. Type wire system, field artillery battalion (GS), 155mm/8-inch, armored, infantry, or mechanized division artillery.

cuits are those necessary for conduct of fire and to the reinforced units.

b. Installation of Battalion Wire System. Utilizing organic wire personnel and equipment, the wire section of headquarters and service battery establishes the following wire circuits and installations:

(1) The battalion switchboard operators install and operate two switchboards in the command post area. One switchboard is located in the battalion fire direction center and terminates those lines used for fire direction. The other switchboard is used as the battalion command switchboard and terminates those lines pertaining to command and administration.

(2) One of the wire teams of the headquarters and service battery installs the circuits from the battalion fire direction center

and command switchboards to the corresponding switchboards of the reinforced unit. Another team installs the lines from the battalion fire direction center and command switchboards to the fire direction center and command switchboards of division artillery. Still another team installs the necessary local lines and the circuits to the battalion observation post, if one is installed. Although division artillery is responsible for the installation of wire circuits from its fire direction center and command switchboards to the corresponding switchboards of the battalion, it will normally require the battalion to physically install the lines.

(3) If time permits, a circuit is installed by one of the battalion wire teams from the battalion command switchboard to the nearest signal center of the division area communication system.

c. Installation of Battery Wire System. The installation requirements of battery wire systems are also shown in figure 10–8.

Section V. RADIO NETS AND WIRE SYSTEM, FIELD ARTILLERY BATTALION, HONEST JOHN (GS)

10–9. Field Artillery Battalion (HJ), Radio Nets

a. Field artillery battalion (HJ) radio nets are shown in figure 10–9. Note that battery radio nets are also included in the referenced figure.

Figure 10–9. Type radio nets, field artillery battalion, Honest John, armored, infantry or mechanized division artillery.
(Located in back of manual)

b. For explanation of the radio nets shown in figure 10–9, refer to paragraph 10–3.

10–10. Field Artillery Battalion (HJ), Wire System
(fig. 10–10)

a. General. The battalion wire system must provide for command and fire control. Priority circuits are those necessary for fire control.

b. Installation of Battalion Wire System. The extent of the battalion wire system depends on the deployment of the battalion, the length of time it is in position, and the desires of the commander (fig. 10–10). Utilizing organic wire personnel and equipment, the wire sections of headquarters battery install the following circuits:

(1) The battalion switchboard operators install and operate two switchboards in the command post area. One switchboard is located in the battalion fire direction center and terminates those lines used for fire control. The second switchboard is used as the battalion command switchboard and terminates those lines used for command and administration.

(2) The priority wire for the wire teams of headquarters battery is the line from the battalion fire direction center to each battery fire direction center.

(3) If time permits, a line is installed between the battery switchboard and the battalion command switchboard.

(4) It may be necessary for the headquarters battery wire teams to assist the wire team of each battery in installing the battery wire system.

(5) Local circuits from the command switchboard are installed as directed in the unit SOP.

(6) Division artillery is responsible for the installation and usually installs a line between the division artillery fire direction center switchboard and the battalion fire direction center switchboard and installs a line between the command switchboards of division artillery and the battalion.

(7) If time permits, a circuit is installed by battalion from the battalion command switchboard to the nearest signal center of the division area communication system.

c. Installation of the Battery Wire System. The priority wire lines to be installed by the field artillery battery, HJ, wire team are those circuits from the battery fire direction center

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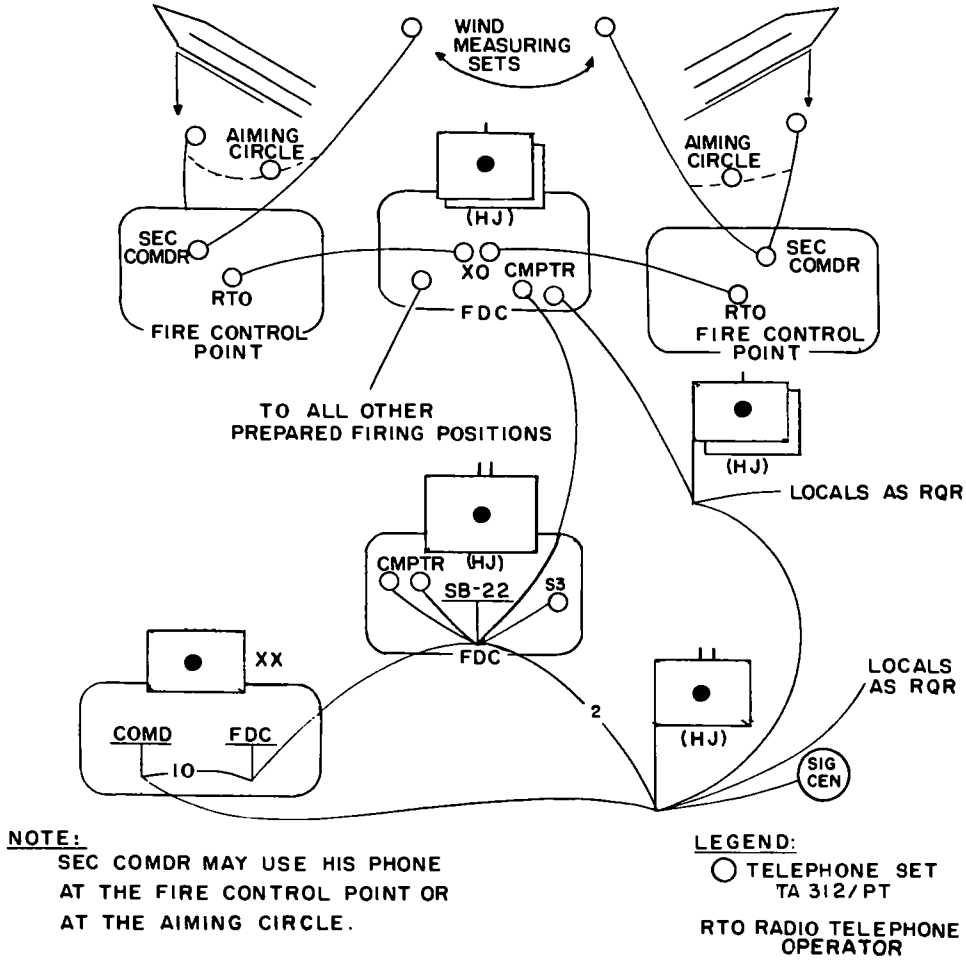


Figure 10–10. Type wire system, field artillery battalion, HONEST JOHN, armored. infantry or mechanized division artillery.

to each proposed launcher position. It may be necessary for the headquarters battery wire teams to assist each battery team. So that wide communication will be available at each launcher section, these teams will install a line from the launcher and a line from the wind measuring set to the section commander's position. Sufficient slack must be provided so that the section commander can use these circuits to lay the launcher and orient the wind measuring set. Each battery will install a similar wire system. The battery wire system is shown in figure 10–10.

CHAPTER 11

ENGINEER BATTALION COMMUNICATIONS, ARMORED, INFANTRY, OR MECHANIZED DIVISION

Section I. BATTALION COMMUNICATIONS SYSTEM

11–1. General

The division engineer battalion is organized into a headquarters and headquarters company, four combat engineer companies, and a bridge company. Full details on the organization, mission, and operation of the engineer battalion are contained in FM 5–135, also refer to TOE 5–145 and TOE 5–155.

11–2. Battalion Headquarters Radio Nets

a. General. The battalion headquarters and headquarters company has organic communications equipment and personnel to operate both the internal and external radio nets required by the battalion.

b. External Radio Communications (fig. 6–7).

(1) *Division CG command net—FM.* The communication section of the headquarters and headquarters company operates a station in the division CG command net.

(2) *Division general purpose net (RATT net No. 3).* The communications section also operates a station in this net for the exchange of operational, intelligence, and logistical information with the echelons of division headquarters.

(3) *Division warning broadcast net—AM.* Battalion headquarters and all companies of the engineer battalion maintain monitoring receivers in this net.

c. Internal Radio Nets (fig. 11–1).

(1) *Battalion command net—AM.* This net is used for long-range control of elements of the engineer battalion. Stations operating in this net include the battalion commander, communications section (NCO), battalion executive officer, three engineer reconnaissance vehicles, and the companies of the battalion. Command, operational, and logistical traffic are passed over this AM net, which constitutes the primary communications system of the battalion; either voice or CW is used.

(2) *Battalion commander's command net—FM.* This net is used primarily by the battalion commander for command and control of subordinate elements of battalion. When range permits, this net takes over much of the traffic of the AM net and gives the commander an FM voice link with each of the companies. If an engineer company is supporting another organization, the radio set of the company commander may monitor the battalion commander's command net and operate in the radio net of the unit being supported.

(3) *Firing unit command net—FM.* This net is also shown in figure 11–1. Note that the platoon also operates a station in the engineer battalion command net—FM.

Figure 11–1. Type radio nets, engineer battalion, armored, infantry or mechanized division.

(Located in back of manual)

11–3. Radio Nets of the Combat Engineer Company

Each of the four combat engineer companies is equipped with organic FM radio sets to maintain internal command and control and external contact with the unit being supported. For longer range communication to battalion headquarters, each company is equipped with an AM radio set and maintains a monitoring receiver in the division warning broadcast net. Refer to figure 11–2 for type radio nets of the combat engineer company. Note that type radio nets of the infantry division engineer company differ slightly from those of the armored and mechanized divisions.

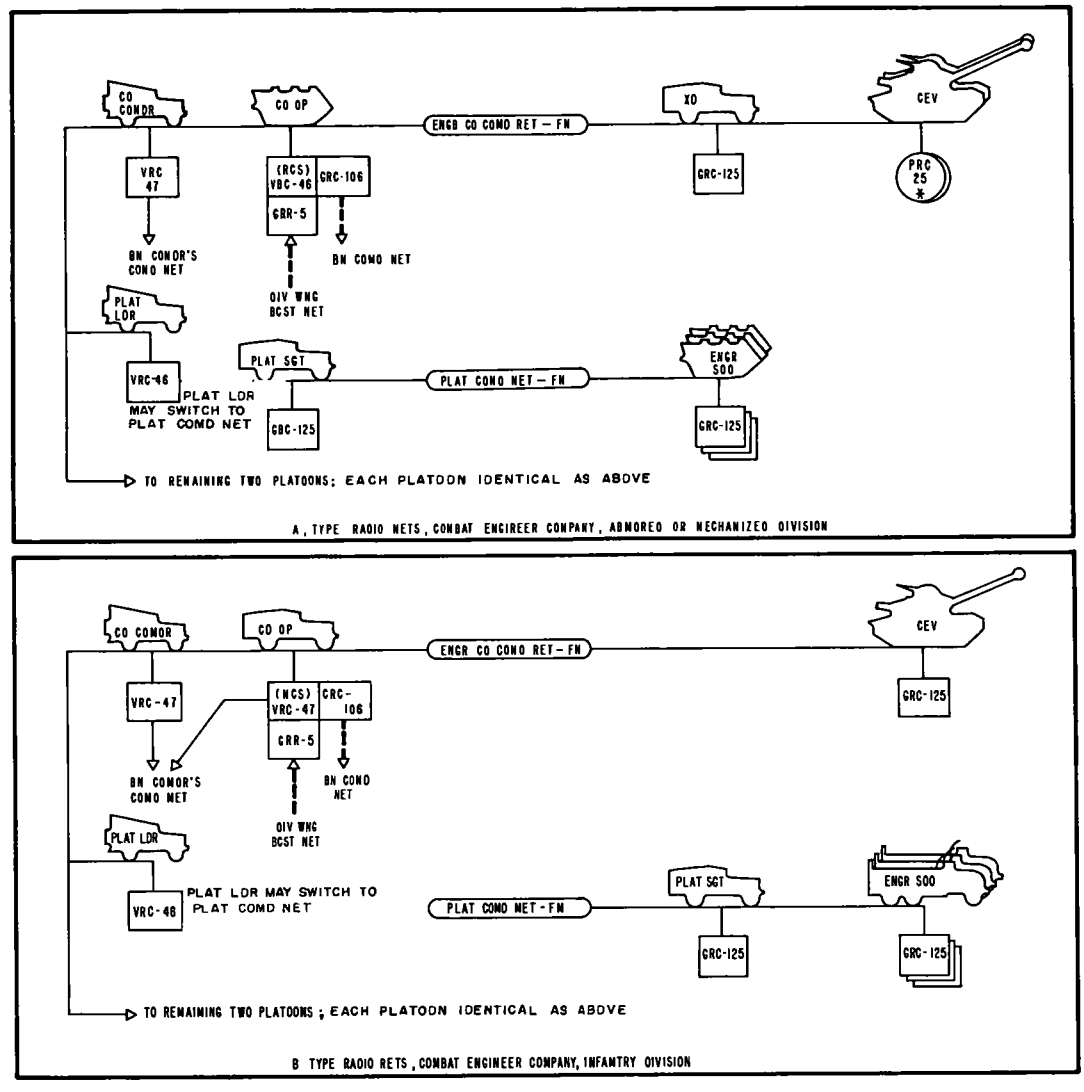


Figure 11-2. Type radio nets, combat engineer company, engineer battalion, armored, infantry, or mechanized division.

Internal radio nets of the combat engineer company are discussed in *a* and *b* below.

a. Engineer Company Command Net—FM.

(1) This net is used for internal command and control of the company. Operating stations include the company commander, company headquarters, one or two combat engineer vehicles, and the three engineer platoons.

(2) NCS is at company headquarters. This FM radio set provides two receivers and one transmitter. Normally, one receiver and one transmitter are used to control the company command net. The remaining receiver is used to monitor the engineer battalion commander's net, or if the company is in a support role, it monitors the command net of the supported organization. Transmitter frequency is switched as required to transmit in the appropriate net. The company commander's radio set has the same capability and is used in the same manner.

b. Platoon Command Net—FM. Operating stations in this net include the platoon leader, platoon sergeant, and three engineer squads.

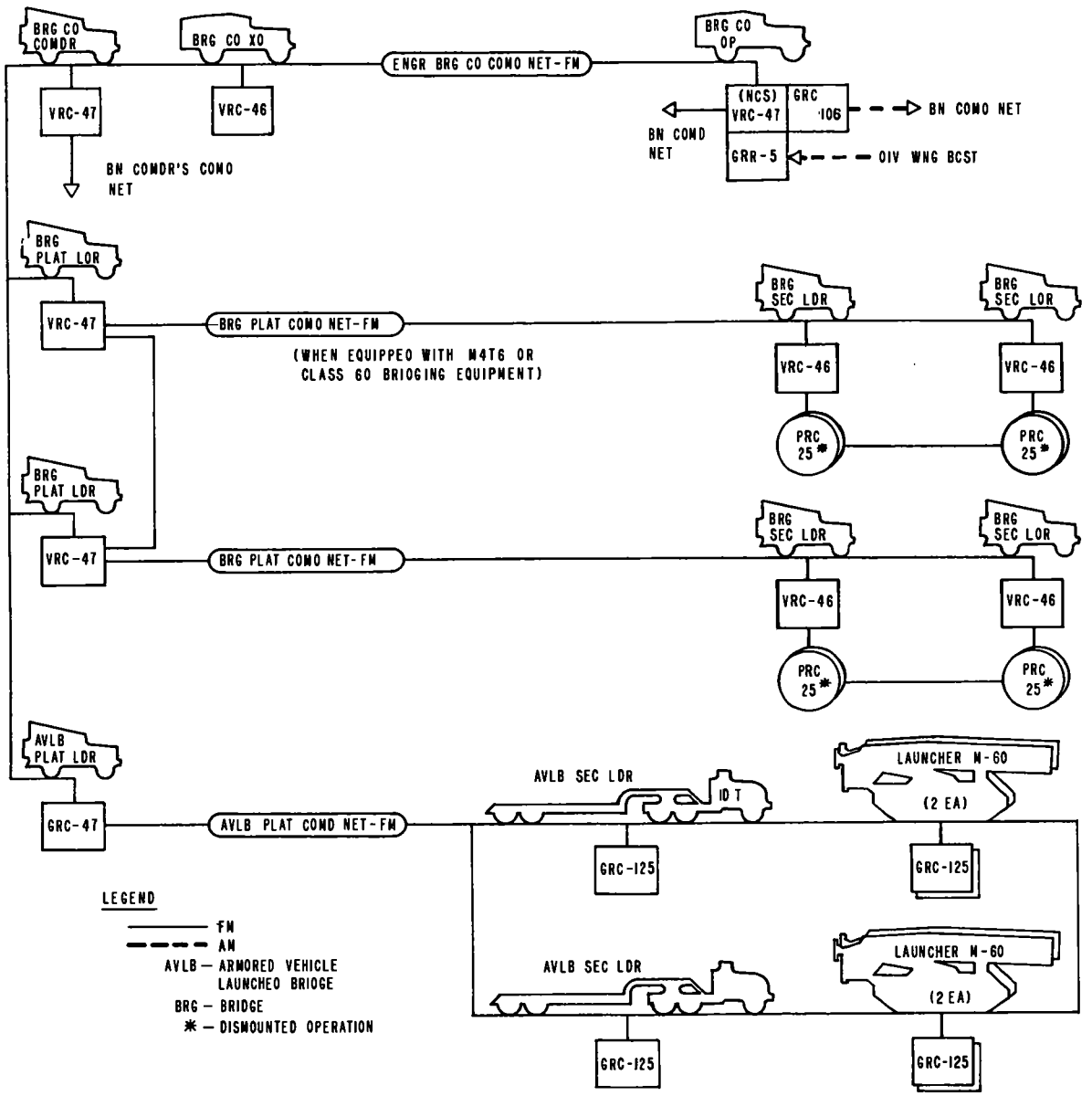


Figure 11–3. Type radio nets, bridge company, engineer battalion, armored, infantry, or mechanized division (when equipped with MT46 or class 60 bridging equipment).

The net is used for internal control of platoon operations.

11–4. Type Radio Nets of Bridge Company (fig. 11–3 or 11–4)

The engineer bridge company is equipped with organic FM radio sets to maintain internal command and control and external contact with battalion headquarters or the unit being supported. For longer range communications to battalion headquarters, the bridge company is equipped with an AM radio set; a monitoring receiver is also maintained in the division warning broadcast net. Refer to figures 11–3

and 11–4 for type radio nets of the bridge company. Note that the bridge company may be organized with two bridge platoons, when the company is equipped with MT46 or class 60 bridging equipment (fig.11–3); or, the company may be organized with two heavy raft platoons in place of the two bridge platoons, when equipped for mobile assault bridging operations (fig. 11–4). Type radio nets of the bridge company are discussed in *a* through *c* below.

a. Engineer Bridge Company Command Net —FM.

(1) This net is used for internal command and control of company elements. Operating stations include the company commander, company executive officer, two bridge or heavy raft platoons, and one armored vehicle launched bridge platoon.

(2) NCS is at company headquarters. As with the combat engineer company, the NCS radio set and the company commander's set afford active operation in one net and monitoring in another.

b. Bridge Platoon Command Net—FM. Operating stations in this net (fig. 11–3) include

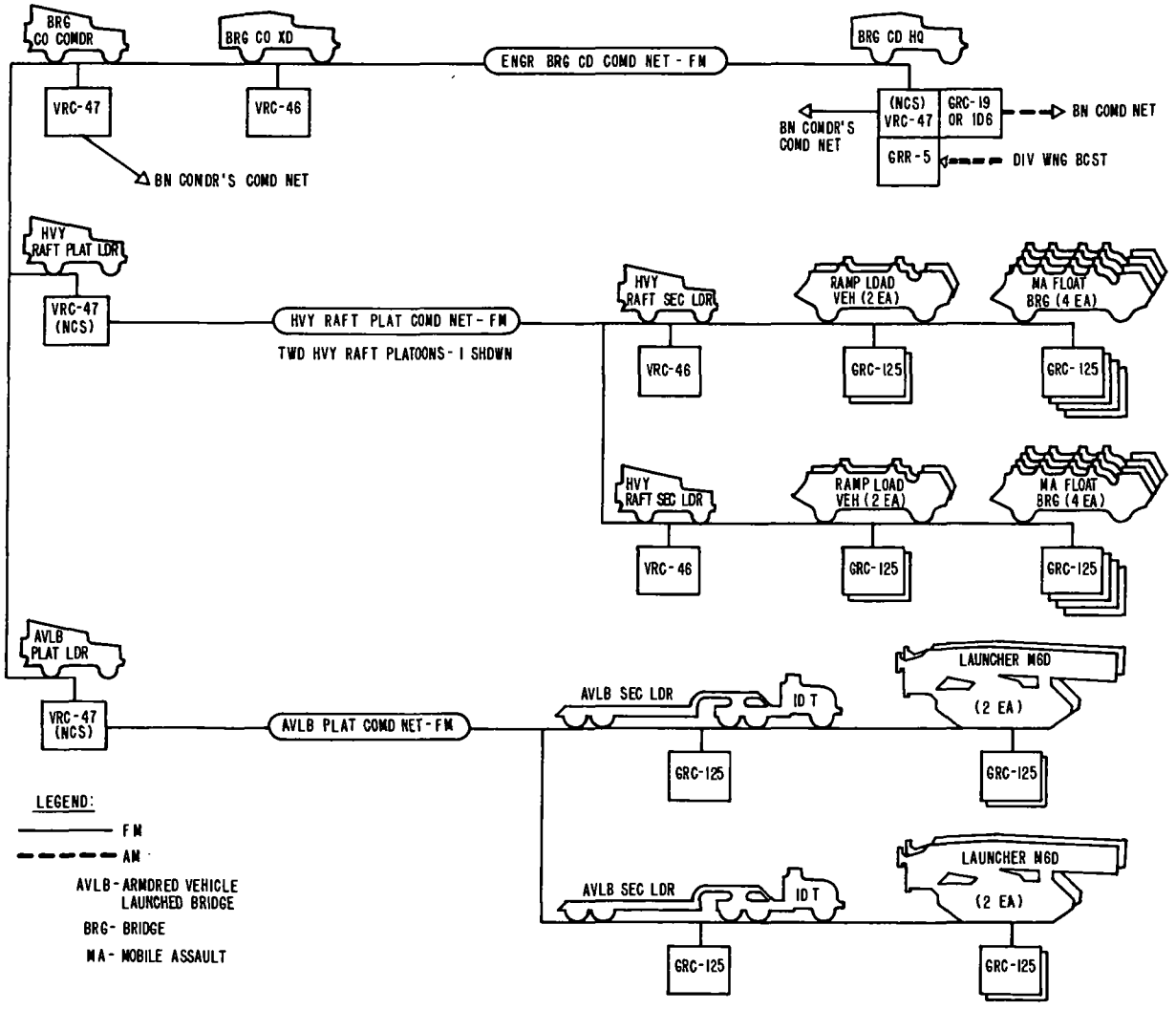
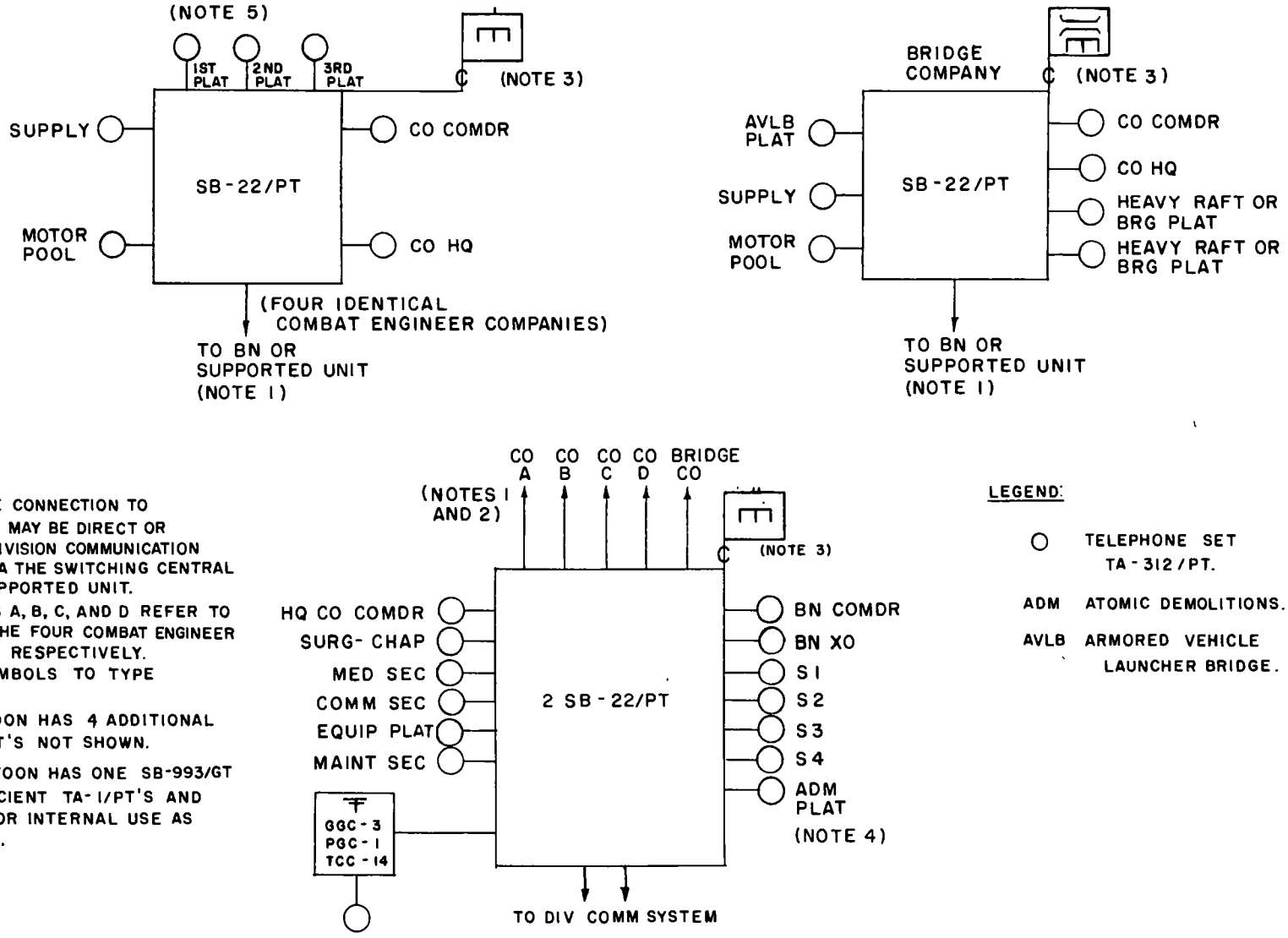


Figure 11–4. Type radio nets, bridge company, engineer battalion, armored, infantry, or mechanized division (when equipped with mobile assault bridging equipment).



NOTES:

1. TELEPHONE CONNECTION TO COMPANIES MAY BE DIRECT OR THROUGH DIVISION COMMUNICATION SYSTEM VIA THE SWITCHING CENTRAL OF THE SUPPORTED UNIT.
2. COMPANIES A, B, C, AND D REFER TO EACH OF THE FOUR COMBAT ENGINEER COMPANIES RESPECTIVELY.
3. ADAPT SYMBOLS TO TYPE DIVISION.
4. ADM PLATOON HAS 4 ADDITIONAL TA-312/PT'S NOT SHOWN.
5. EACH PLATOON HAS ONE SB-993/GT AND SUFFICIENT TA-1/PT'S AND CE-11'S FOR INTERNAL USE AS REQUIRED.

LEGEND:

○ TELEPHONE SET TA-312/PT.

ADM ATOMIC DEMOLITIONS.

AVLB ARMORED VEHICLE LAUNCHER BRIDGE.

Figure 11–5. Type wire system, engineer battalion, armored, infantry or mechanized division.

the platoon leader and two bridge sections. In addition to a vehicular set, each section has two FM sets for dismounted operation.

c. Heavy Raft Platoon Command Net—FM. Operating stations in this net (fig. 11–4) include the platoon leader and the two heavy raft section leaders. Each raft section has six additional radio sets (mounted on four ramp vehicles and two mobile assault floating bridges.)

11–5. Wire System and Messenger Service

a. A type wire system for the engineer battalion of an armored, infantry, or mechanized division is shown in figure 11–5. Note that, in addition to telephone, engineer battalion headquarters also has landline teletypewriter equipments to communicate through the division system to superior headquarter.

b. Internal messenger service in the division engineer battalion is performed by organic personnel in addition to other duties.

Section II. COMMUNICATION PERSONNEL

11–6. Battalion Communication Section

The battalion communication section is organic to the engineer battalion headquarters and headquarters company. This section is organized and equipped to install, operate, and to maintain the internal battalion headquarters communications system and, within capabilities, to extend this system to organic and attached elements of the battalion as required. Specialists of the section are organized as needed to fulfill battalion communication requirements. They include a communication chief, radio operators, radio teletype operators, switchboard operators, and wiremen. The battalion communication officer exercises operational control over this section and over the engineer battalion communication systems. Refer to chapter 2 for typical duties of personnel.

11–7. Communications Personnel at Company Level

The combat engineer company and the bridge company are authorized communications personnel to install, operate, and maintain internal company communications. These personnel include one communications chief per company and radio operators and radio mechanics assigned as required. Designated personnel within the company serve as wiremen and switchboard operators in addition to other duties. Refer to chapter 2 for typical duties.

CHAPTER 12

AVIATION BATTALION COMMUNICATIONS, INFANTRY DIVISION

Section I. BATTALION COMMUNICATIONS SYSTEM

12-1. Organization

The aviation battalion of an infantry division consists of a headquarters and headquarters company, an airmobile company (light), and an aviation general support company. Complete details of the organization, mission, and operation of the aviation battalion are contained in FM 1-15. The aviation battalion is no longer an organic unit of the armored and mechanized divisions. In the armored and mechanized divisions, the supply and transport battalion has an aviation support detachment to provide airfield facilities for organic and attached division aircraft. Refer to TOE 1-75 for additional data.

12-2. Battalion Headquarters Communications

a. General. The battalion headquarters company has organic communications equipment and assigned personnel (in a communications section) to operate the battalion communications facilities in both internal and external communications systems. In addition to the communications mission, personnel of the communications section assist in the operation of an instrumented airfield with terminal flight facilities, including ground control approach.

b. External Radio Communications (fig. 6-7).

(1) *Division RATT net No. 1 (operations intelligence).* The communications section operates a station in this net for the exchange of operational and intelligence information with the echelons of division headquarters.

(2) *Division RATT net No. 2 (admin-log).* When equipment is available, the communications section will operate a station in this net.

(3) *Division CG command net—FM.* The aviation battalion commander and the operations section will normally operate a station in this net.

(4) *Division warning-broadcast net (AM).* Both the communications section and operations section (fig. 12-1) are equipped with radio receivers to monitor this net.

c. Internal Radio Nets (fig. 12-1).

(1) *Battalion command net—FM.* This net provides the battalion commander with a means for command and control of the battalion. When required by the tactical situation, logistical traffic is passed over this net. The NCS is normally operated by the battalion operations section.

(2) *Air traffic control net—UHF.* The operation sections of battalion headquarters and the various companies operate stations in this net for control of division airspace. Each aircraft has organic VHF-UHF radio equipment to enter the net as specified by SOP or as otherwise required.

d. Wire. The aviation battalion is provided entry into the division communications system through the facilities of the nearest division signal center (fig. 12-2). When required, the battalion communications section lays wire to elements of the battalion operating in the vicinity of the battalion command post. Normally, division signal battalion provides a multichannel radio terminal at division airfield for use as required.

e. Messenger Service. Messenger service is normally provided through facilities of the division communications system. Special messengers are employed as needed.

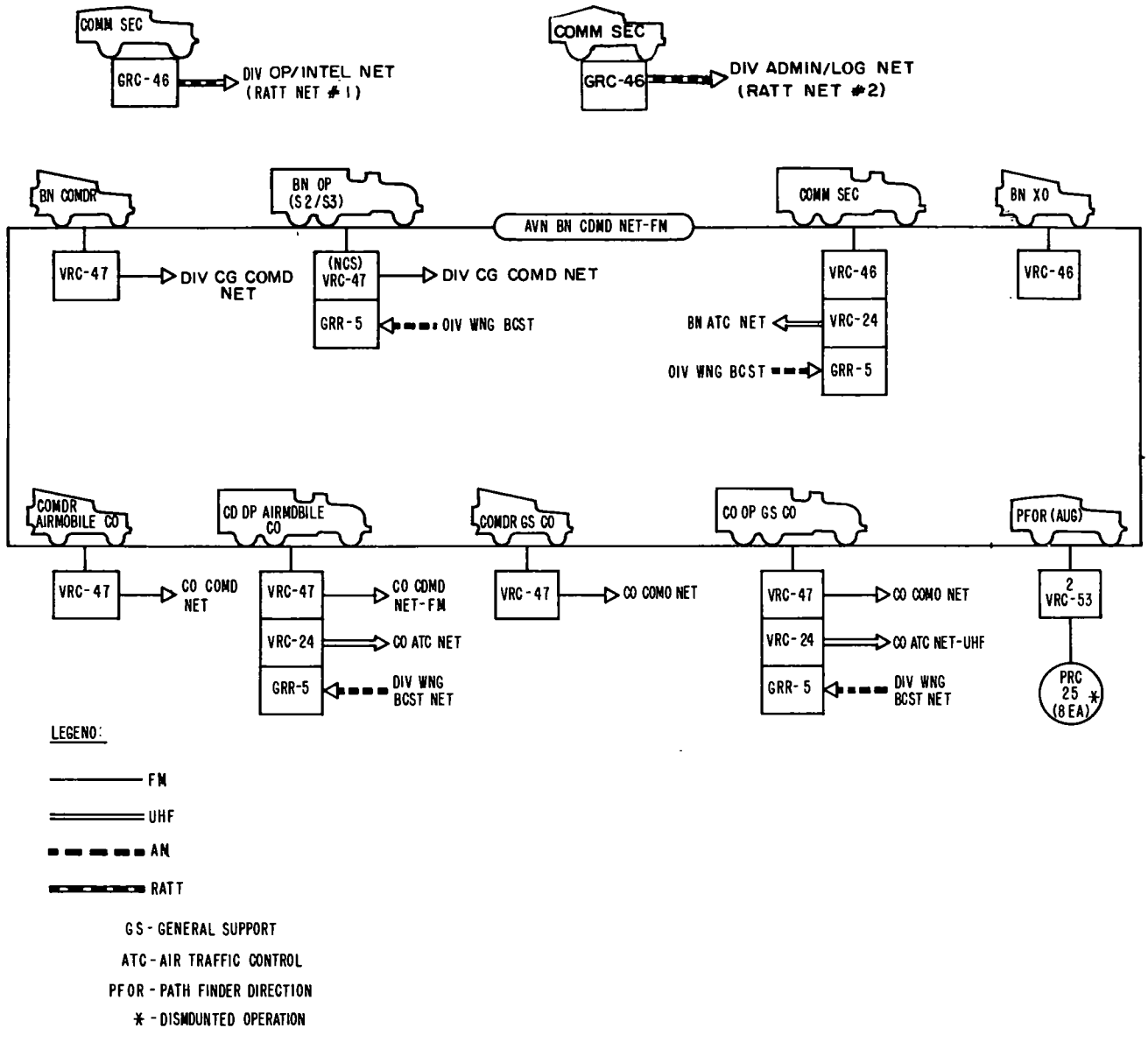


Figure 12–1. Type radio nets, aviation battalion, infantry division.

12–3. Airmobile Company (Light)

a. General. The airmobile company of the aviation battalion provides tactical air movement of combat troops and air movement of combat supplies and equipment within the combat zone.

b. Radio Communications (fig. 12–3).

(1) The airmobile company operates stations in the following higher headquarters nets:

(*a*) *Aviation battalion command net—FM.* The company commander and operations section operates stations in this net. If required, other company stations may monitor the net.

(*b*) *Air traffic control net—UHF.* The operations section operates a station in this net.

(*c*) *Division warning broadcast net—AM.* The operations section is provided with a receiver to monitor this net.

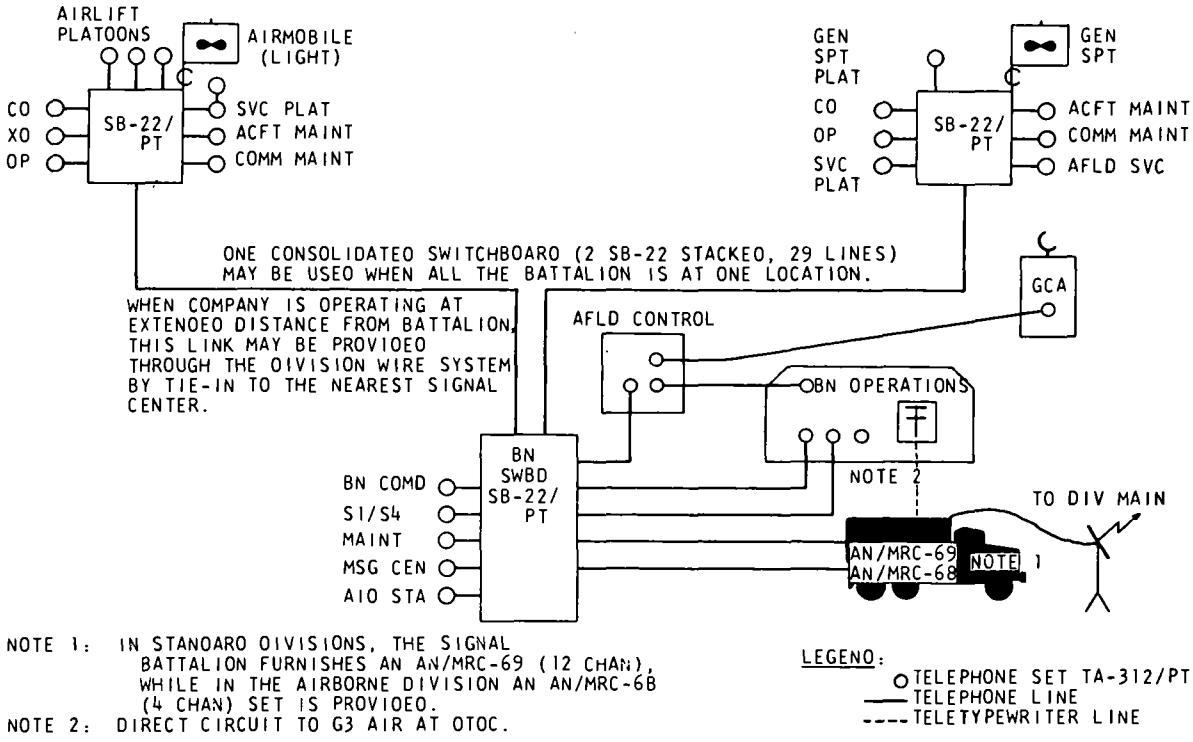


Figure 12–2. Type wire system, aviation battalion, infantry division.

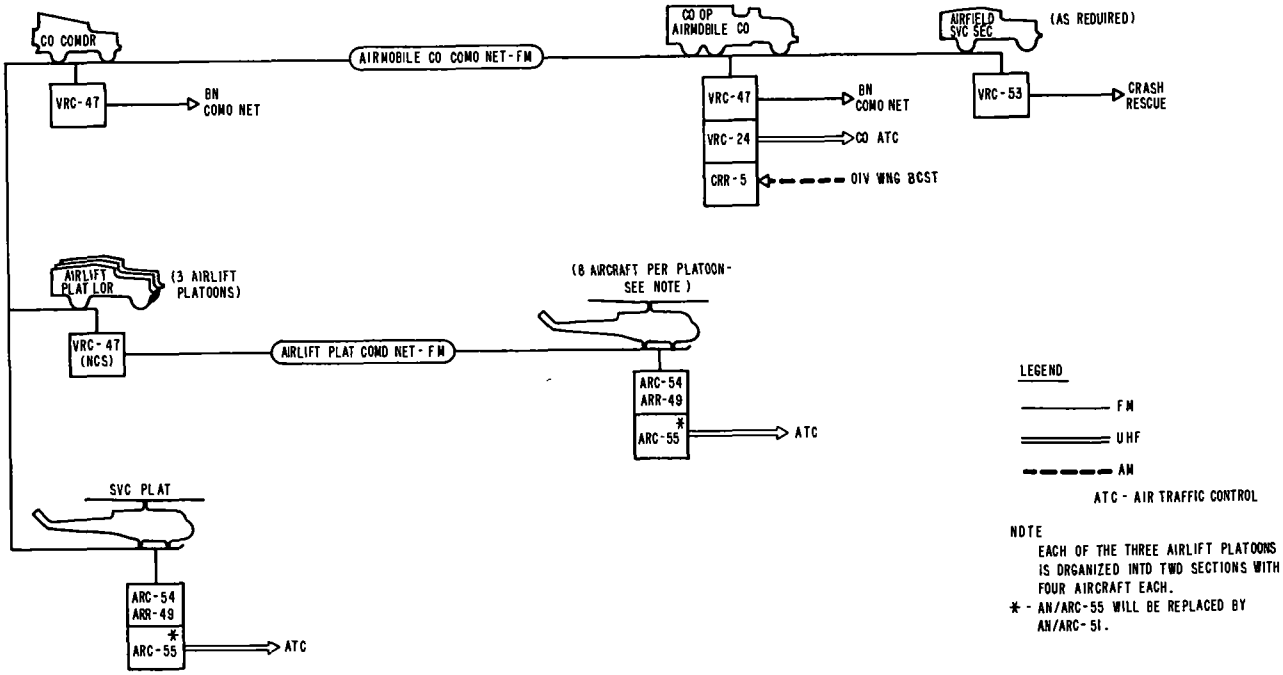


Figure 12–3. Type radio nets, airmobile company, aviation battalion, infantry division.

(*d*) *Other nets.* Elements of the company in support of, or attached to, other divisional or nondivisional units enter appropriate command nets as required. Helicopters equipped as helicopter command posts (HCP) provide multinet communications with higher headquarters CPs, ground tactical CPs, FSCC, and TACPs.

(2) The airmobile company establishes the following nets for command control of subordinate elements and for logistical traffic.

(*a*) *Company command net—FM.*

(*b*) *Air traffic control net—UHF.*

(*c*) *Airlift platoon command net—FM.* Each of the three airlift platoons maintains such a net for internal command and control.

c. Wire Communications. Normally, the airmobile company is linked to the division communication system because of the distance involved. The airmobile company is usually located well forward in the vicinity of the division reserve; whereas the aviation battalion command post is located in the vicinity of the division base airfield in the division support area. If feasible, the airmobile company may be linked directly to the aviation battalion wire system.

d. Messenger Service. Messenger service is provided through the facilities of the division communications system. This service is augmented by battalion scheduled and special messenger service as required.

12–4. Aviation General Support Company

a. General. The aviation general support company provides air support for division headquarters, division support command, and other units not equipped with organic aircraft. Helicopters equipped as HCPs provide access to a broad range of communication nets for the division commander, his staff, and the division support command.

b. Radio Communications (fig. 12–4).

(1) The general support company operates

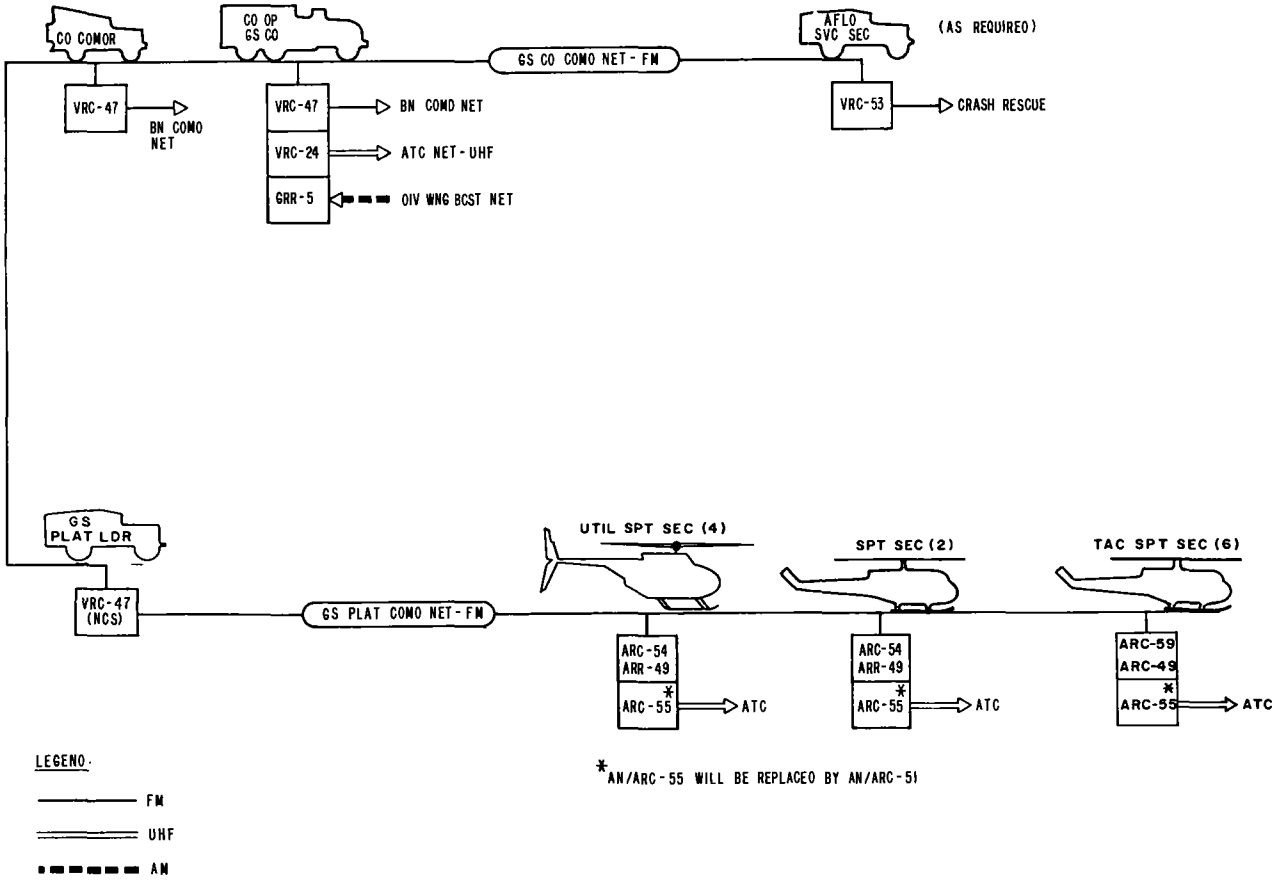


Figure 12–4. Type radio nets, general support company, aviation battalion, infantry division.

stations in the following higher headquarters nets:

(*a*) *Battalion command net—FM.* Stations are in the company commander's vehicle and the company operations trucks.

(*b*) *Air traffic control net—UHF.* This station is operated by the company operations section.

(*c*) *Division warning broadcast net—AM.* The company operations section monitors this net.

(*d*) *Other nets.* Elements of the company in support of, or attached to, other units will enter the appropriate command nets as required.

(2) The general support company establishes and operates the following nets for command and control of subordinate elements and for logistical traffic as required.

(*a*) *General support company command net—FM.* The NCS is operated by the company operations section.

(*b*) *Platoon nets.* The general support platoon operates a platoon command net (FM).

c. Wire Communications. Normally, the general support company is connected into the battalion wire system (fig. 12–2), by battalion headquarters wire personnel. In some situations, direct access to the division communications system may be authorized. Internal wire facilities are provided by company personnel.

d. Messenger Service. Messenger service is normally provided through the facilities of the division communications system. Special messengers are employed as needed.

Section II. COMMUNICATIONS PERSONNEL

12–5. Signal Officer

a. In general, the signal officer of the aviation battalion performs duties similar to those described in chapter 2. Because of the specialized mission of the battalion, certain differences do exist in the signal communications functions performed by this signal officer. For this reason the complete duties of the aviation battalion signal officer will be discussed.

b. The signal officer of the aviation battalion prepares, plans, and makes recommendations for the employment of signal communications to include ground and aircraft communications systems. Specifically, the signal officer—

(1) Supervises the installation of radio, wire, and terminal flight and control facilities at the battalion instrumented airfield.

(2) Coordinates with appropriate flight operations center (FOC) and flight coordinating centers (FCC) on pertinent communications matters.

(3) Coordinates with the S1, who selects the location for the command post.

(4) Coordinates with S2 on communications security measures.

(5) Obtains current signal operation instructions (SOI) and standing signal instructions (SSI) from higher headquarters. He prepares and distributes extracts of the SOI and SSI.

(6) Prepares the communication portion of the battalion SOP.

(7) Submits signal information recommendations for the aviation annex to the division operations order, and for paragraph 5 and the signal annex of the battalion operations order.

(8) In coordination with the S4, plans and supervises matters pertaining to signal supply and maintenance.

(9) Supervises the installation, operation, and maintenance of the signal equipment issued to the communications section and the battalion headquarters.

(10) Procures, stores, and distributes codes, ciphers, and crytopgrahic material.

12–6. Aviation Battalion Communications Section

The battalion communication system is installed, operated, and maintained by the communication section which is organized as discussed in *a* through *d* below.

a. The *communications chief* assists the signal officer by directly supervising the enlisted

men of the section in the installation, operation, and maintenance of the battalion communications and electronics navigation systems.

b. Radio and avionic electrical equipment repairmen perform organizational maintenance by inspecting, testing, and repairing signal equipment assigned to the battalion. They maintain the authorized level of repair parts.

c. The *radio teletypewriter teams* install and operate the radio/teletypewriter sets, receive and transmit messages, and establish and post station logs.

d. The *switchboard operator/field wireman teams* installs, operates, and maintains the switchboard. This team, with the assistance of sections having organic telephones, installs the battalion wire system.

12–7. Communications Personnel of Airmobile Company

The airmobile company has an assigned communications chief (for maintenance), avionics electrical equipment mechanics, a radio mechanic, switchboard operator, and wireman. Selected personnel of the company may be additionally trained to operate organic radio sets and to man the unit switchboard.

12–8. Communications Personnel of the General Support Company

The general support company has the same authorizations for communications personnel as does the airmobile company. Selected personnel of the company may be further trained to operate organic radio sets and to assist in manning the unit switchboard.

CHAPTER 13
COMMUNICATIONS, IN MILITARY POLICE COMPANY ARMORED, INFANTRY, OR MECHANIZED DIVISION

13-1. General

a. Radio is the most frequently used means of communications in the military police (MP) company. Employment is flexible—the company may be organized into platoons, squads, patrols, or control points as required. Refer to TOE 19-27.

b. The division provost marshal (PM) exercises operational control over company operations.

13-2. Radio Communications (fig. 13-1)

a. External Communications. The company commander and the operations sergeant maintain radio stations in the division command net. The provost marshal (PM) switches from the company command net to the division CG command net as required. The company NCS and the military police platoon leaders are equipped with receivers to monitor in the division warning broadcast net.

b. Internal Communications. Internal radio nets maintained by the MP company may include—

(1) *MP company command net—FM.* This net is the most frequently used means

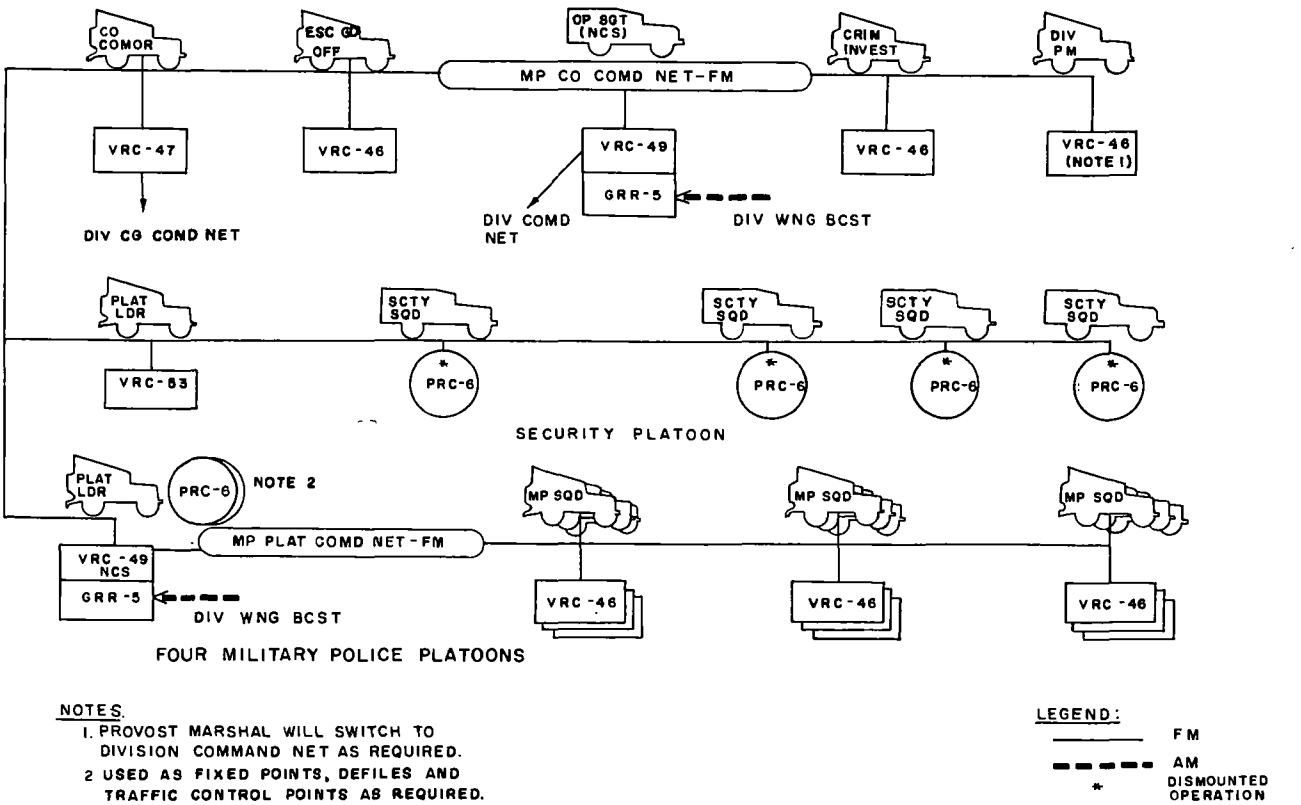


Figure 13-1. Type radio nets, military police company, armored, infantry, or mechanized division.

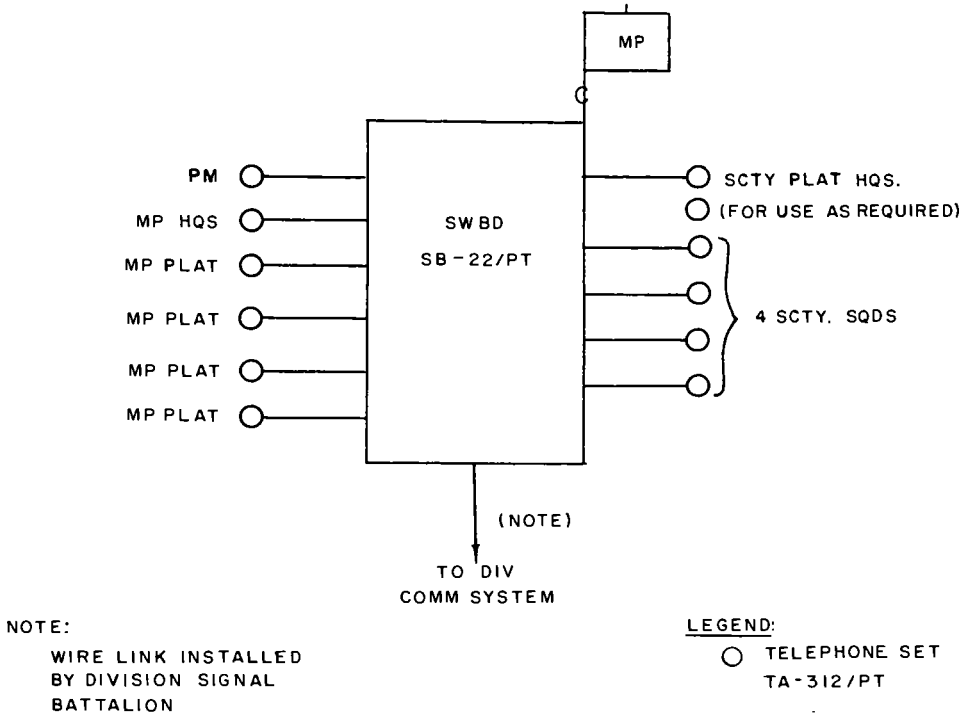


Figure 13–2. Type wire system, military police company, armored, infantry or mechanized division.

for command, control, and coordination of MP operations. The company commander locates stations as required throughout the division area. These stations may be as shown in figure 13–1 or be located on a utility basis with patrols, escorts, traffic control points, or used in other employments as required.

(2) *Platoon command nets—FM.* Type platoon command nets are also shown in figure 13–1.

13–3. Wire Communications

a. When practical, the MP company may install limited wire facilities of the type shown in figure 13–2. Normally, however, MP company elements use the divison communications system to obtain telephone service to the company CP, PW collecting points, traffic control posts, and similar points.

b. If an MP platoon or smaller unit is placed in support of a divisional unit such as a brigade or battalion, necessary wire service will be provided by the unit supported.

13–4. Supplemental Means of Communications

In addition to radio and wire, the MP company uses other more specialized means of communications. Examples are given in *a* through *d* below.

a. Public address systems are used to control PW's or other large groupings of personnel.

b. Arm and hand signals are used by military policemen, especially for traffic control.

c. Temporary signs and tape are used for lane and route marking.

d. Sirens, whistles, klaxons, horns, buzzers, emergency warning lights, and similar means may also be employed to transmit prearranged messages or warnings.

13–5. Communications Personnel

The communications chief has overall supervision of communications matters within the

MP company. The company also has radio mechanics. Operation of the company switchboard and organic radio sets is performed by designated personnel of the company in addition to regularly assigned primary duties. Refer to chapter 2 for typical duties of these personnel.

CHAPTER 14

DIVISION SUPPORT COMMAND COMMUNICATIONS, ARMORED, INFANTRY, OR MECHANIZED DIVISION

Section I. GENERAL INFORMATION AND SUPPORT COMMAND HEADQUARTERS COMMUNICATIONS

14–1. Organization

The division support command organic to the three ground type divisions includes the following:

a. Headquarters, headquarters company, and band (TOE 29–2).

b. Maintenance battalion (TOE 29–35, 29–25, and 29–15).

c. Supply and transport battalion (TOE 29–65 and 29–5).

d. Medical battalion (TOE 8–35).

e. Administration company (TOE 12–37).

14–2. Mission and Operations

a. Mission. Division support command provides division level supply, direct support maintenance, (except cryptographic and medical equipment), and medical and miscellaneous services for all assigned and attached divisional elements.

b. Operations. Headquarters of division support command and designated operating elements of the command are established in rearward sectors of the divisional area—the base of operations is referred to as the "division support area." To insure timely and effective support, other elements of the support command will operate forward in the vicinity of brigade trains. From the support area proper, administrative and logistical services are extended to units located in the immediate vicinity. Refer to FM 54–2 for doctrinal guidance on the employment and operations of the division support command.

14–3. Support Command Operations Platoon, Signal Support Operations Company, Division Signal Battalion

a. The support command operations platoon, signal support operations company, division signal battalion, provides communications support to the support command; such communications support excludes organic staff radios. This platoon provides communications from the support command command post to the subordinate units of the support command operating in the division support area. Subordinate units of the support command operating outside the division support area obtain signal support from the nearest division signal center.

b. The platoon leader of the support command operations platoon also acts as signal advisor at support command headquarters. His platoon provides the support command headquarters with the following support:

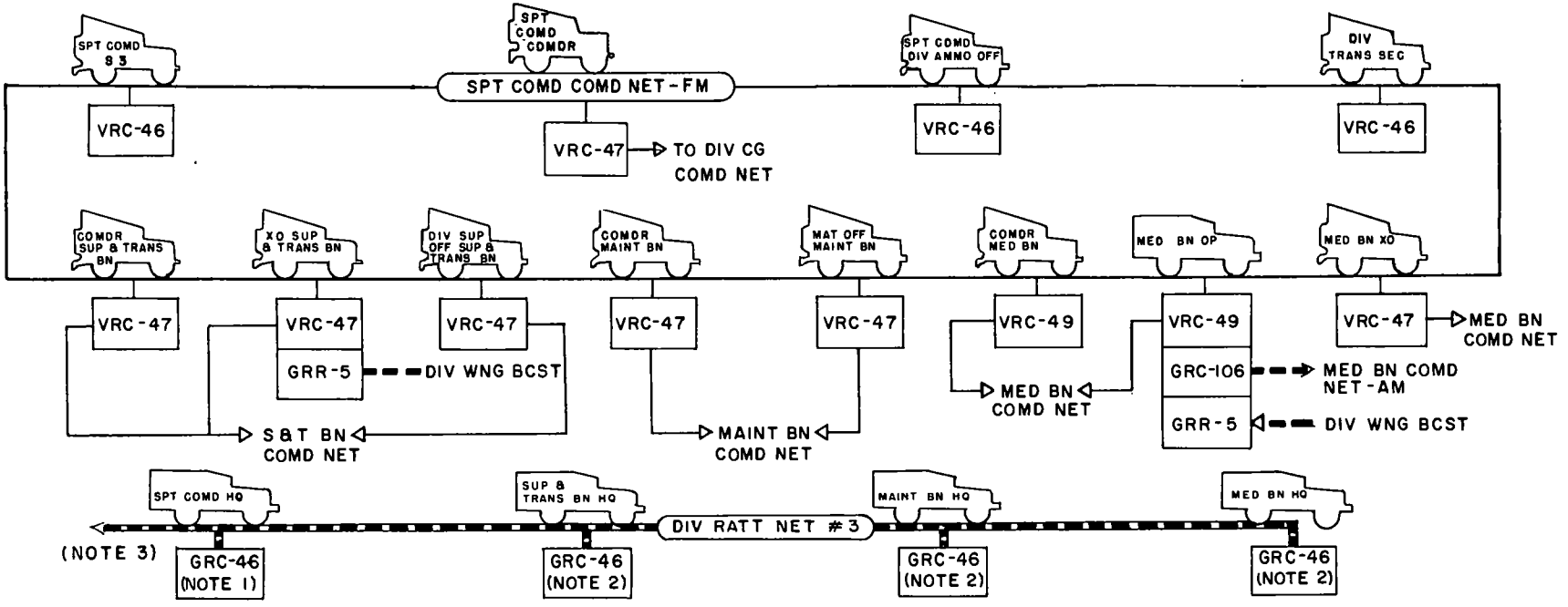
(1) Installs and operates the communications center and cryptographic, teletypewriter, and radio (except staff vehicle radios) communications for the support command operations center.

(2) Installs and operates a signal center in the division area communications system that provides trunk line service for the support command operations center, subordinate units of the support command located in the division support area, and other attached and supporting units operating in the vicinity.

(3) Installs and operates local telephone communications for the support command operations center.

(4) Provides and operates radio teletypewriter equipment to function as NCS for the division RATT net No. 2 (administration-logistics) in the division support area.

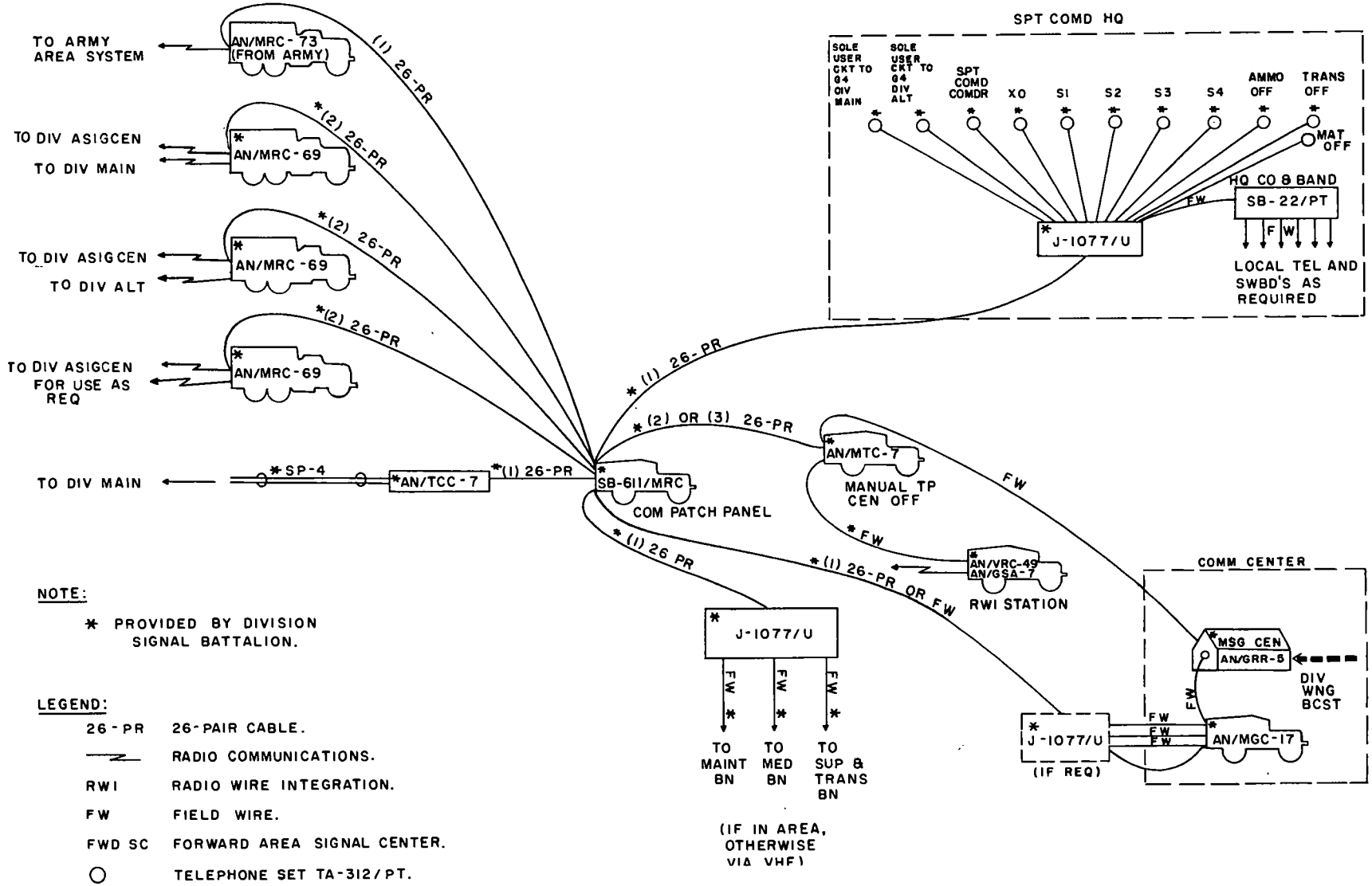
(5) Provides and operates a radio teletypewriter station in the division RATT net No. 3 (general purpose).



NOTES.

1. VEHICLE WITH RADIO SET PROVIDED BY DIV SIG BN. STATION MAY ACT AS NCS.
2. VEHICLE WITH RADIO SET PROVIDED BY DIV SIG BN AS REQUIRED; NORMALLY WHEN BN OPERATES AWAY FROM SPT COMD HQ.
3. TO DIV MAIN AND OTHER STATIONS WHEN SPT COMD HQ IS NOT NCS.

Figure 14-1. Type radio nets, division support command, armored, infantry, or mechanized division.



NOTE:

* PROVIDED BY DIVISION SIGNAL BATTALION.

LEGEND:

26-PR	26-PAIR CABLE.
—~—	RADIO COMMUNICATIONS.
RWI	RADIO WIRE INTEGRATION.
FW	FIELD WIRE.
FWD SC	FORWARD AREA SIGNAL CENTER.
○	TELEPHONE SET TA-312/PT.

Figure 14–2. Type wire/cable interconnection diagram, division support command headquarters, armored, infantry, or mechanized division.

(6) Provides and operates radio teletypewriter equipment to function in the division RATT net No. 3 for subordinate units of the support command, as necessary.

c. Additional details concerning the support command operations platoon are contained in FM 11–50.

14–4. Communications to Higher and Adjacent Headquarters

a. General. The support command maintains communications to higher and adjacent headquarters by operating subordinate stations in division radio nets, and maintains communications over telephone and teletypewriter circuits provided by the division communications system.

b. Radio. Figure 6–7 shows the division support command operating radio stations in the following radio nets:

Division CG command net—FM

Division warning broadcast net—AM

Division RATT net No. 2 (Div. support command is NCS)

Division RATT net No. 3

Descriptions of the external radio nets of the division support command are given in (1) through (5) below.

(1) *Division RATT net No. 2 (administration-logistics).* The support command operations platoon of the division signal battalion operates the NCS for this net (fig. 6–7). This net links the support command operations center with the G4 at division main/division alternate and the brigade, division artillery and armored cavalry squadron S4's—also included are brigade trains. This net supplements the telephone and teletypewriter communications provided by the division communications system. It is of particular use for the dissemination of administrative and logistical traffic when units are on the move or are not connected into the division communications system.

(2) *Division RATT net No. 3 (general purpose).* Division support command operates a station in this net for operational, logistical and administrative traffic.

(3) *Division CG command net (FM).* For voice radio communications with division, the support command commander maintains a radio from the command post in this net. The operations officer (S3) and his section monitor this net and enter only to represent the support command commander in his absence.

(4) *Division warning broadcast net (AM).* A receiver for monitoring this net is provided by the support command operations platoon.

(5) *Division RATT net No. 1 (operations-intelligence).* If authorized, the support command enters this net as required by switching from another yet.

c. Wire and Radio Relay. The support command operations center is linked to the division communications system through wire and VHF radio relay facilities, which are provided by the support command operations platoon of the division signal battalion (fig. 6–6). Note that army signal troops maintain a radio relay terminal at support command for entry into the army area system.

d. Messenger. Messenger service, both scheduled and special, is provided by the division signal battalion.

14–5. Internal Communications

a. Radio. The following radio nets are used for internal communications within division support command:

(1) *Support command command net—FM.* Principal stations in this net include the commanding officer (NCS)), the support command staff, and the headquarters of the medical, maintenance, and supply and transport battalions. Refer to figure 14–1.

(2) *Division RATT Net No. 3.* RATT net No. 3 may be used for internal support command communications when any constitutent battalion is operating beyond normal FM range. Equipment and personnel are furnished by the division signal battalion on an as required and when available basis.

b. Wire. Wire communications to subordinate units located in the vicinity of the support command command post is provided by the support command operations platoon of the division signal battalion (fig. 14–2). Elements of the command operating in the brigade trains area are connected into the division area com-

munications system through a radio relay terminal at the brigade trains area, or by field wire from the brigade trains area to the nearest division area signal center. Note that figure 14–2 shows a type internal and external wire cable interconnections at support command headquarters.

c. Messenger. Messenger service within the support command complex is provided through the facilities of the signal battalion or through the use of support command personnel who are assigned additional duties as foot or motor messengers.

14–6. Communications Personnel of Headquarters, Headquarters Company and Band

The company has no primarily designated communications specialists. Selected personnel are additionally trained to operate the unit switchboard and organic radio sets.

Section II. MAINTENANCE BATTALION, ARMORED, INFANTRY OR MECHANIZED DIVISION

14–7. Maintenance Battalion

a. Mission. The maintenance battalion provides direct support maintenance for all types of maintainable division material, except medical, punched card machines (PCM), and quartermaster air equipment. It also provides repair parts, other maintenance supplies and maintenance float of selected end items for the equipment it supports.

b. Organization. Although the maintenance battalion in each division is composed of the same primary elements (headquarters and main support companies), the maintenance battalions supporting different types of divisions are tailored to the division supported. Detailed information concerning the maintenance battalion is contained in FM 9–30.

c. Radio Communications. The maintenance battalion may operate radio stations in the following nets.

(1) *Division RATT net No. 3 (general purpose).* When the maintenance battalion is separated from the support command operations center by distances exceeding FM-voice range, a signal battalion RATT team may operate a station at maintenance battalion headquarters. Signal support operations company of the division signal battalion will provide the equipment and personnel for this station as required.

(2) *Division warning broadcast net—AM.* Ground radio receivers are organic to battalion headquarters and each of the companies for monitoring this net (fig. 14–3).

(3) *Support command command net—FM.* The maintenance battalion commander operates a station in this net (fig. 14–1). Other staff officers of the battalion may monitor as required—figure 14–3 shows the materiel officer operating in this net.

(4) *Maintenance battalion command net—FM.* This net provides the battalion commander with direct communications to key personnel of battalion headquarters and elements of the main support company, forward support company, and transportation aircraft maintenance company (fig. 14–3). It is used for command, control, and administration of the battalion. The battalion commander, executive officer, materiel officer and subordinate company commanders normally operate in this net. In addition, the materiel officer uses the battalion command net to communicate with the shop office of the forward support companies and the main support company, where distance is not excessive.

(5) *Forward support company command net—FM.* This net provides the company commander with a command and control means over the company (fig. 14–3). Also operating in this net, as required, are the maintenance officers of supported units.

(6) *Headquarters and main support company elements.* Elements of this company operate in the division support command net (fig. 14–3). Company stations include the company commander, shop office, service and evacuation platoon (two stations), and the mechanical maintenance platoon.

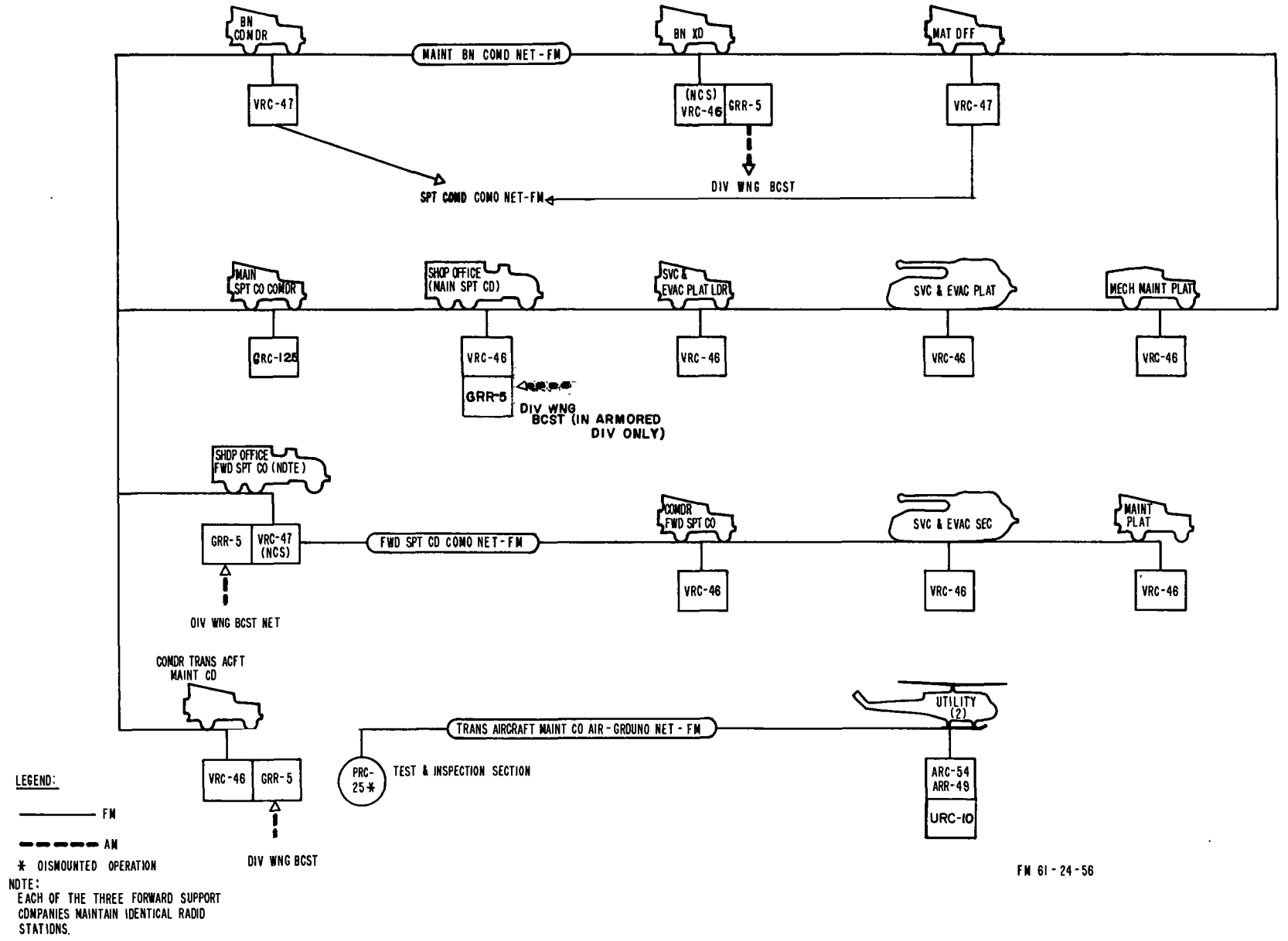
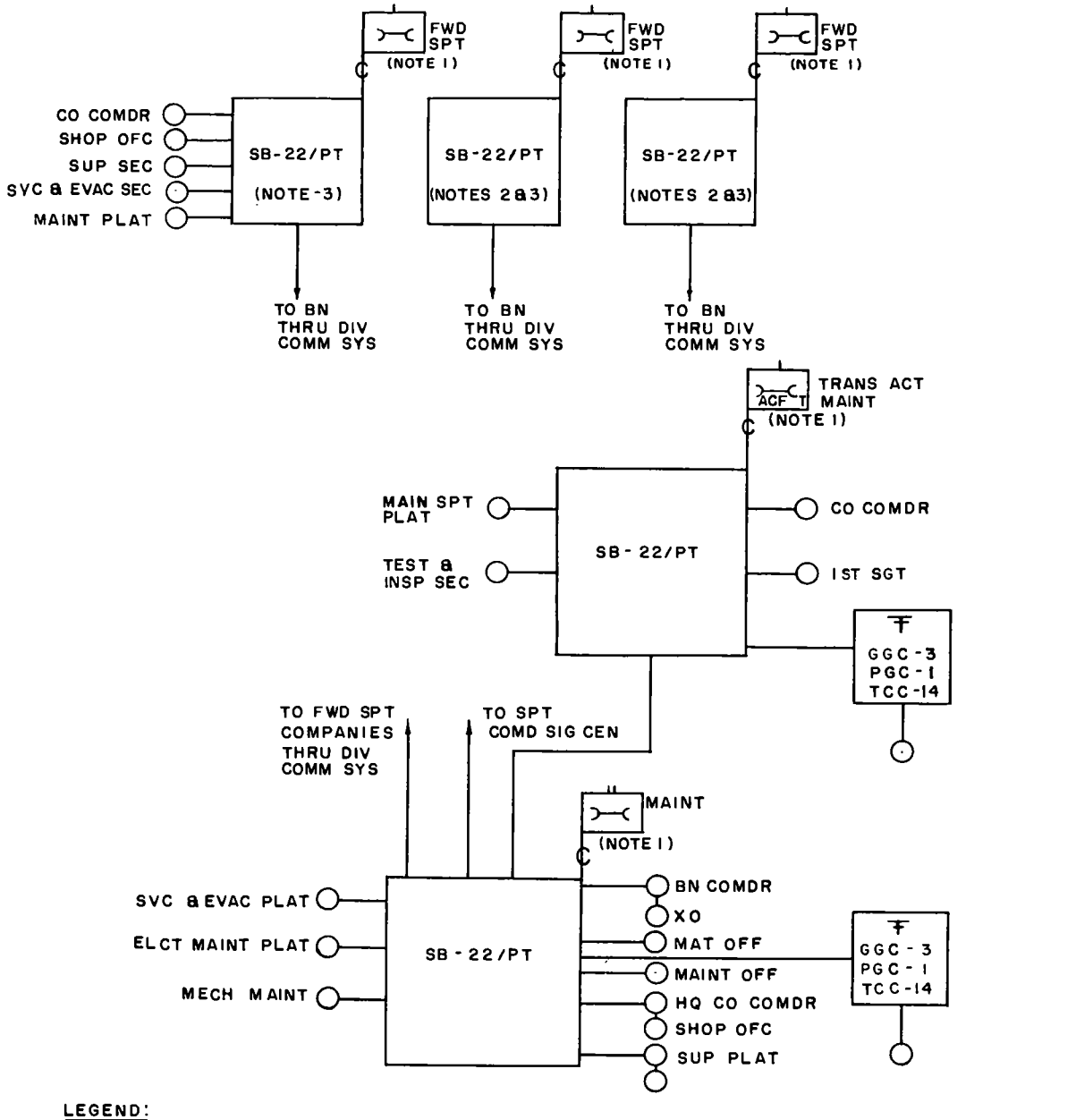


Figure 14–3. Type radio nets, maintenance battalion, armored, infantry, or mechanized division.



LEGEND:

O -TELEPHONE SET TA-312/PT

Ŧ -TELETYPEWRITER FACILITY

NOTES:

1. ADAPT SYMBOL TO DIVISION TYPE AS APPROPRIATE.
2. FORWARD SUPPORT COMPANIES ARE IDENTICAL.
3. TELETYPEWRITER SERVICE FOR FORWARD SUPPORT COMPANIES IS OBTAINED AT FORWARD AREA SIGNAL CENTERS.

Figure 14–4. Type wire system, maintenance battalion, armored, infantry, or mechanized division.

(7) *Transportation aircraft maintenance company airground net—FM.* This net provides the company commander with means of communicating with the utility helicopter assigned to the test and inspection section. Normally, this company is located at the division airfield.

d. Wire Communications. A type wire system for the maintenance battalion is shown in figure 14–4. Note that battalion headquarters and the transportation aircraft maintenance company (at division airfield) have their own organic land-line teletypewriter facilities. Teletypewriter traffic to each of the three forward support companies is transmitted from battalion headquarters to the appropriate forward area signal center.

e. Messengers. Messenger service is provided through the facilities of the division communications system. No motor messengers are organic to the maintenance battalion.

14–8. Communications Personnel of the Maintenance Battalion

a. Headquarters and Main Support Company. This company is authorized teletypewriter operators and a switchboard operator. Other personnel of the company are trained in radiotelephone and switchboard operation in addition to regularly assigned duties.

b. Forward Support Company. This company is authorized one switchboard operator. Organic radio sets and the company switchboard are operated by company personnel in addition to regularly assigned duties.

c. Transportation Aircraft Maintenance Company. The company has designated teletypewriter operators; company switchboard and organic radio sets are operated by company personnel as additional duties.

Section III. SUPPLY AND TRANSPORT BATTALION, ARMORED, INFANTRY, OR MECHANIZED DIVISION

14–9. Supply and Transport Battalion

a. General. The supply and transport battalion of the infantry, mechanized, and armored divisions consists of a headquarters and headquarters company, a supply and service company, and a transportation motor transport company. For details on the organization, mission, and operation of the supply and transport battalion, see FM 10–50.

b. Radio Communications.

(1) When the battalion operates away from support command headquarters, the signal support operations company of the division signal battalion will provide a radio teletypewriter for a station in RATT net No. 3 (fig. 14–1).

(2) The battalion commander and certain staff officers are provided FM-voice radio equipment for operation in the support command command net (fig. 14–5).

(3) A battalion command net (FM-voice) is operated to provide the commander with facilities for command and control. Company commanders and staff officers will operate in this net as required (fig. 14–5).

(4) Other FM-voice nets may be operated as required for command control and administrative-logistical operations.

(5) In armored and mechanized divisions, a division aviation support detachment, supply and transport battalion, provides airfield terminal facilities. Radio nets for the detachment are illustrated in figure 14–6. The detachment is organic to headquarters and headquarters company.

c. Wire.

(1) The support command operations platoon of the division signal battalion will provide wire facilities down to battalion headquarters. This provides entry into the division communications system for both telephone and land-line teletypewriter equipment. Elements of the supply and transport battalion operating away from the support command area will be provided entry into the division communications system through the facilities of the supported unit or through the signal center in the vicinity of their operations.

(2) The supply and transport battalion in-

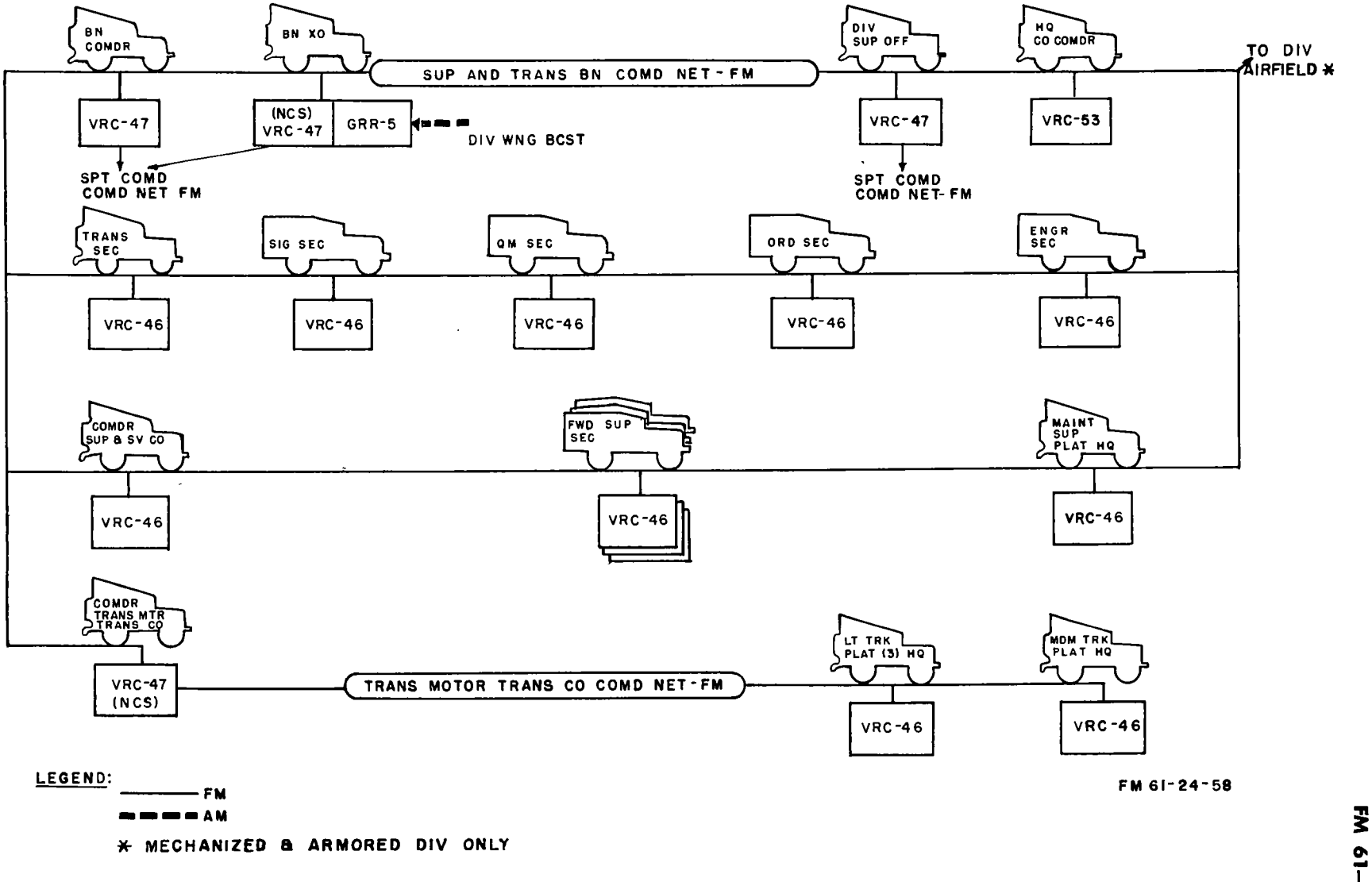


Figure 14–5. Type radio nets, supply and transport battalion, armored, infantry, or mechanized division.

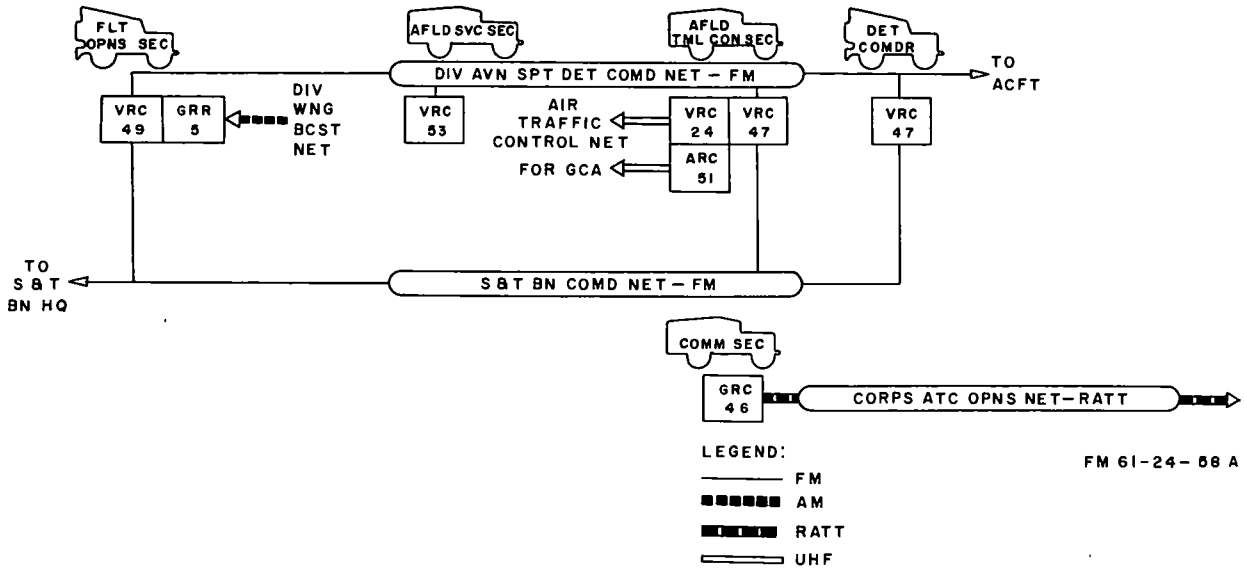


Figure 14–6. Type radio nets, division aviation support detachment, supply and transport battalion, armored or mechanized division.

ternal wire system will be established by assigned communications personnel using organic equipment (fig. 14–7).

d. Messenger. No organic messengers are assigned to the supply and transport battalion. As an additional duty, unit personnel may be assigned as foot or motor messengers when required.

14–10. Communications Personnel of Supply and Transport Battalion

a. Headquarters and Headquarters Company. The company is authorized a communications chief who has an operational interest and a function in all communications matters of the battalion. Included also are switchboard operators, teletypewriter operators, and a wireman. Additional personnel are trained to assist in switchboard and radio telephone operation in addition to regularly assigned duties.

b. Supply and Service Company. Assigned to this company are a switchboard operator and a wireman (also a switchboard operator). Other personnel of the company operate organic radio sets as additional duties.

c. Transportation Motor Transport Company. This company is authorized no personnel with a primary communications MOS. Selected personnel, therefore, must be additionally trained to operate the company switchboard and organic radio sets.

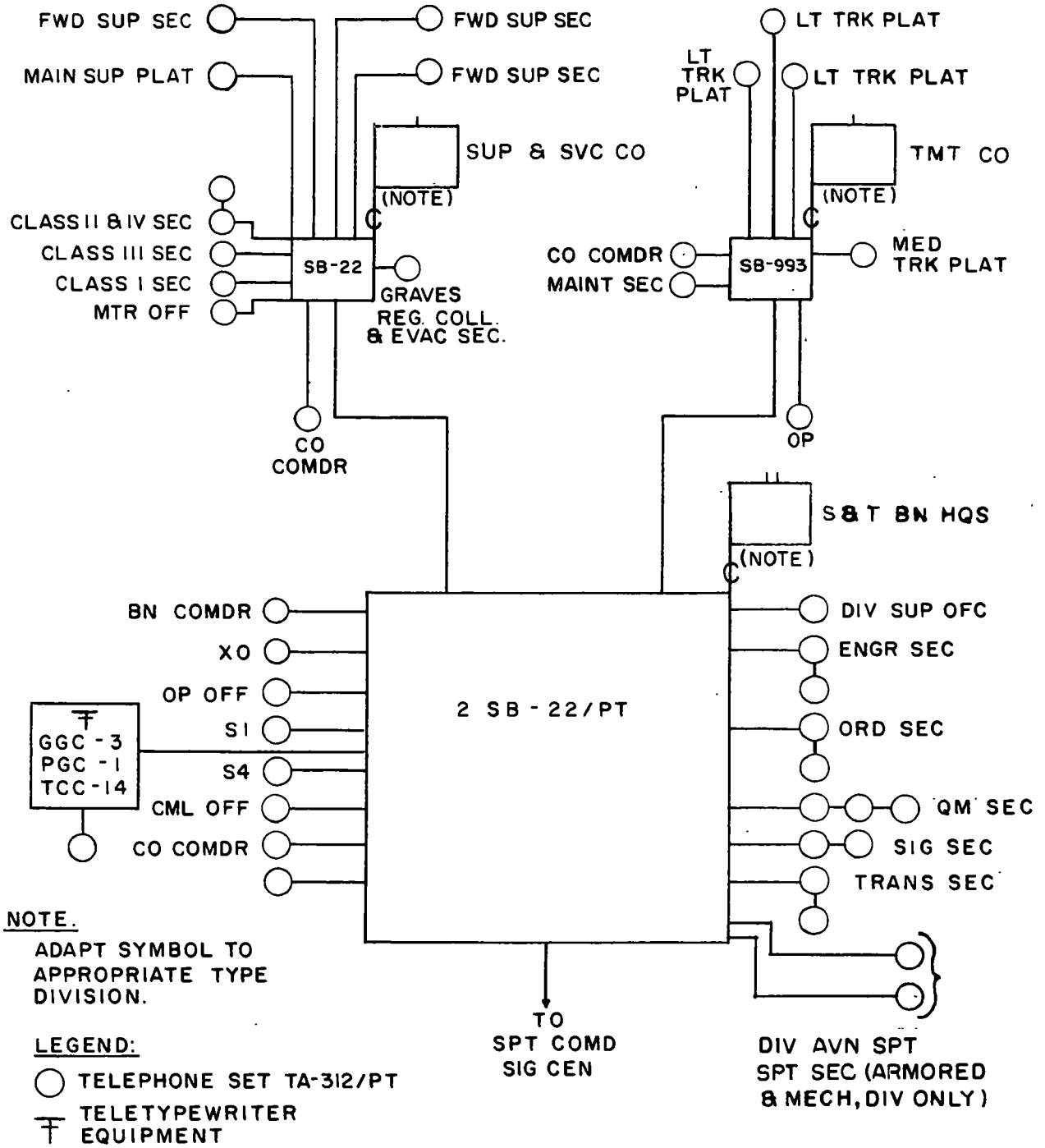


Figure 14-7. Type wire system, supply and transport battalion, armored, infantry, or mechanized division.

Section IV. MEDICAL BATTALION, ARMORED, INFANTRY, OR MECHANIZED DIVISION

14-11. Medical Battalion

a. General. The division medical battalion consists of a headquarters and support company and three medical companies. The battalion provides division-level medical service, as prescribed by the division medical plan and policies, to a division base and up to eleven combat battalions. Refer to FM 8-15 for more complete details on the operations of the division medical battalion.

b. Radio Communications.

(1) When the battalion operates away from support command headquarters, the signal support operation company of the division signal battalion may provide, if available, a radio teletypewriter station. This station will operate in RATT net No. 3 (fig. 14-1).

(2) The medical battalion command net—FM is used for internal control of the battalion if all elements are within range of the net control station (fig. 14-8).

(3) For longer range radio communications the battalion operates a medical battalion command net—AM.

(4) The division warning broadcast net (AM-voice) is monitored by the elements of the medical battalion.

(5) The division support command command net—FM is entered by the battalion commander, as required (fig. 14-8).

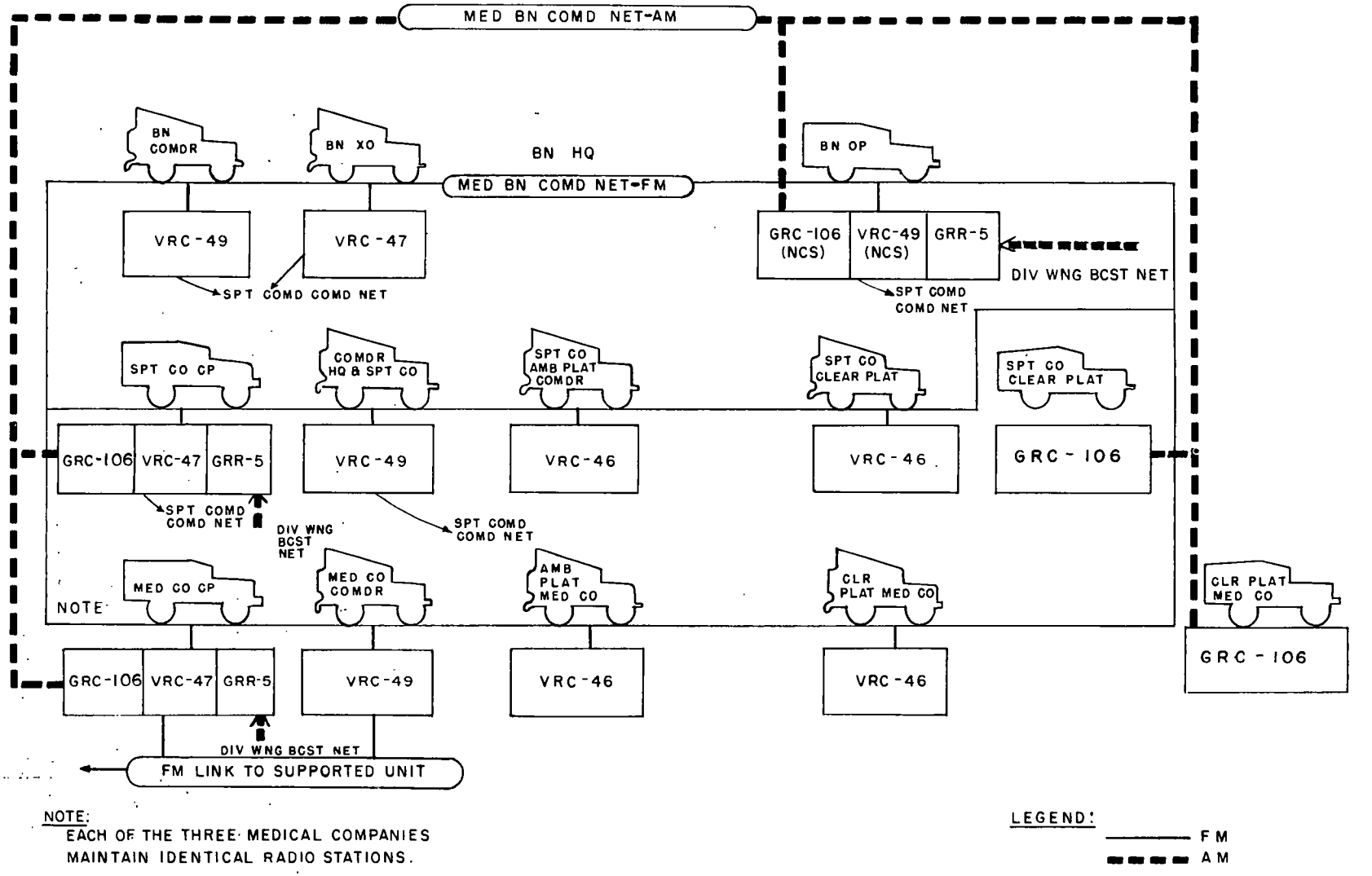
c. Wire and Messenger. A type internal wire communications system for the medical battalion is illustrated in figure 14-9. Note that battalion headquarters has organic land-line teletypewriter facilities. Internal messenger service for the medical battalion is provided by organic personnel in addition to other duties.

d. Supplemental Means of Communication. Elements of the medical battalion located in the support command area may install and operate an internal wire system that is tied into the support command or the division communications system. Elements in support of combat units will be tied into the supported unit system or the nearest forward area signal center.

14-12. Communications Personnel in the Medical Battalion

a. Headquarters and Support Company. This company contains the battalion communications chief whose duties encompass the communications operations of the entire battalion. Also included are intermediate speed radio operators, a switchboard operator, teletypewriter operators, radio mechanics, and a wireman (who also acts as switchboard operator).

b. Medical Company. Each of the three medical companies is authorized intermediate speed radio operators. Other personnel of company are additionally trained in radiotelephone and switchboard operation.



NOTE:
EACH OF THE THREE MEDICAL COMPANIES MAINTAIN IDENTICAL RADIO STATIONS.

LEGEND:
FM
AM

Figure 14–8. Type radio nets, medical battalion, armored, infantry, or mechanized division.

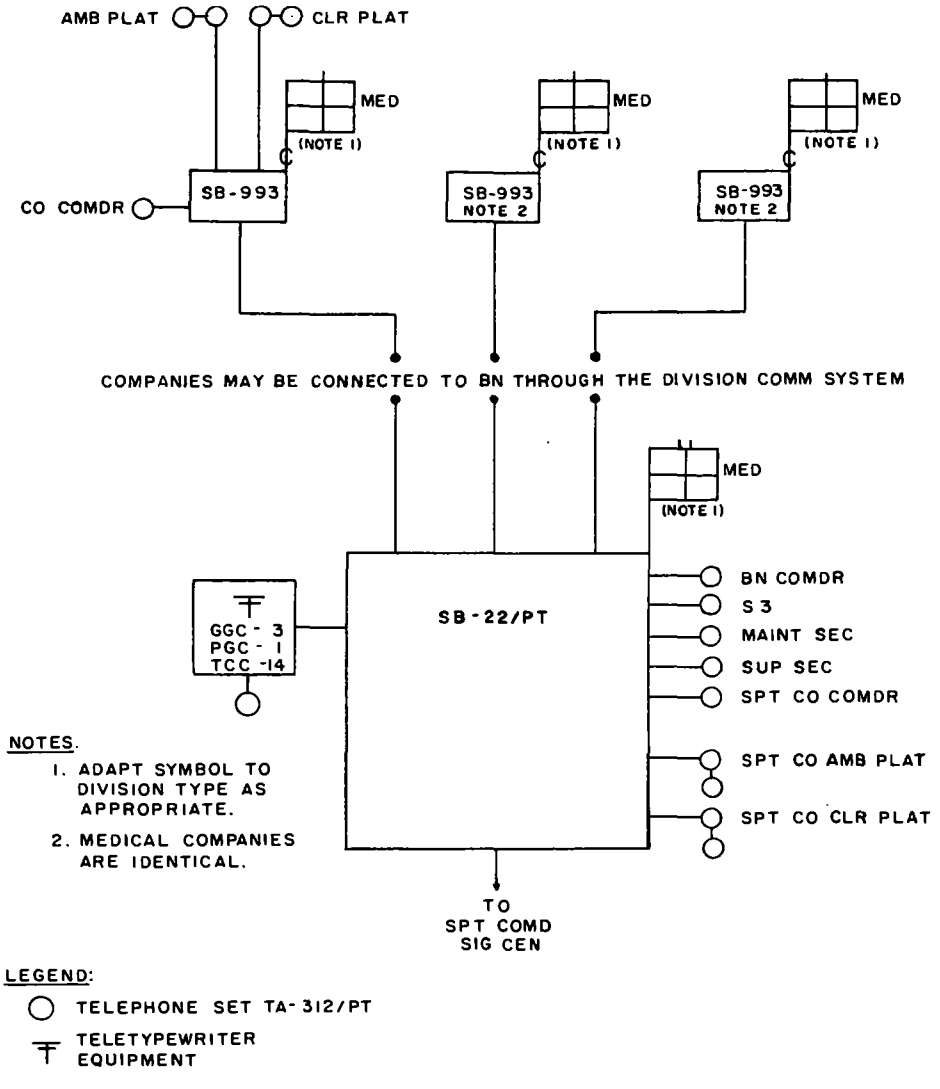


Figure 14–9. Type wire system, medical battalion, armored, infantry, or mechanized division.

Section V. ADMINISTRATION COMPANY, ARMORED, INFANTRY, OR MECHANIZED DIVISION

14–13. Division Administration Company

a. General. The division administration company is a carrier unit for certain special staff elements that provide personnel and administrative support to the division and its attachments. It provides supply and direct support maintenance for electrical accounting equipment. For details of the employment of the administration company see FM 12–11.

b. Communications. The company is provided communications entry into the division communications system by the rear echelon operations platoon, support operations company, division signal battalion. If the administration company is located outside the division rear boundary, it is provided entry into the army area communications system to contact division.

14–14. Communications Personnel in the Administration Company

This company has no personnel whose primary MOS is in a communications specialty.

CHAPTER 15
AIR DEFENSE ARTILLERY COMMUNICATIONS, ARMORED, INFANTRY, AND INFANTRY (MECHANIZED) DIVISIONS

Section I. GENERAL INFORMATION

15-1. Division Air Defense Artillery Battalion

Air defense for divisions may be provided by one of two types of air defense units. The Air Defense Artillery Chaparral/Vulcan Battalion (when fielded) will be organic to armored, infantry, and mechanized divisions. Pending the availability of the Chaparral/Vulcan battalion, divisional air defense may be provided by assigned or attached Air Defense Artillery Automatic Weapons Battalions, Self-Propelled (M 42).

a. Chaparral/Vulcan Battalion. The Chaparral/Vulcan Battalion consists of a headquarters and headquarters battery and four firing batteries.

b. M42 Battalion. The M42 battalion consists of a headquarters and headquarters battery and four automatic weapons batteries, SP. Each automatic weapons battery is composed of two automatic weapons platoons with eight firt units per platoon.

15-2. Communications Requirements

a. The division air defense artillery (ADA) battalion utilizes its organic communications equipment and, when available, the multichannel radio network of the division communication system. Normally, the means thus provided satisfy the communications requirements for flexible and alternate routing among widely dispersed ADA units.

b. Both radio and wire communications are used within the division ADA battalions for command and control. However, the necessity for frequent and rapid moves and the wide dispersal of fire unit positions make radio the primary means of communications. When possible, radio nets are supplemented and paralleled by the unit wire system. The use of messenger service and the collocation of ADA headquarters elements with the headquarters of the supported unit will also facilitate communications. Normally, TOE communication equipments will meet the tactical and administrative requirements for communications. Where feasible, entry into the division multichannel radio network (area system) will be provided to ADA battalion elements through division signal centers.

15-3. Communications Personnel

a. Headquarters and Headquarters Battery. Each headquarters and headquarters battery of the type battalions under discussion (Chaparral/Vulcan and M42) is authorized a battalion communications officer in the battalion headquarters section and a separate battalion communications section.

(1) The battalion communications officer plans, coordinates, and supervises the extensive wire and radio nets used throughout the battalion. Refer to chapter 2 for additional information on typical duties.

(2) The battalion communications section operates under the operational control of the battalion communications officer and installs, operates, and maintains communications equipment within the battalion headquarters area. This section establishes radio communications with higher, lower, and adjacent headquarters and, when feasible, establishes wire communications to subordinate batteries. Refer to TOE 44-326 and 44-86 for specific authorizations of personnel in the battalion headquarters section. Refer to chapter 2 for typical duties of personnel.

(3) In addition to communications per-

sonnel of the battalion communications section, communications specialists are authorized to such headquarters battery elements as the operations and intelligence section, liaison section, radar section, etc.

b. Firing Battery. Each firing battery of the types under discussion (Vulcan, Chaparral, or automatic weapons) is authorized a battery communications section. Personnel of this section, operating under a battery communication chief, install and operate communications equipment in the battery area. The section establishes radio communications with higher and lower headquarters and with adjacent or supported units; wire circuits to subordinate platoons and supported units are installed as required. In addition to the communications personnel of the battery communications section, radio operators are also authorized to the respective Vulcan, Chaparral, and automatic weapons batteries. Refer to TOE 44-328, 44-327 and 44-87 for personnel allocations. Typical duties of communications personnel are discussed in chapter 2.

Section II. CHAPARRAL/VULCAN COMMUNICATIONS

15-4. External Radio Nets

a. Division Command CG Net—FM. The communications section of the headquarters and headquarters battery operates a station in the division CG command net. The ADA Chaparral/Vulcan battalion commander, executive officer, S2, S3, and assistant S3 vehicles are also equipped to operate in this net (fig. 15-1).

b. Division Warning Broadcast Net—AM. The battalion headquarters operates in this net from the Operations/Intelligence Section (fig. 15-1). The Vulcan and Chaparral batteries monitor this net (figs. 15-2 and 15-3).

c. Division Operations/Intelligence Net (RATT Net No. 1). This net is used by the battalion Operations/Intelligence Section to receive command-operational traffic from division. It may also be used for the exchange of information and intelligence with division headquarters (fig. 15-1).

d. Division General Purpose Net (RATT Net No. 3). The battalion communications section operates a station in this net for the exchange of command, administration, and logistical information with division headquarters (fig. 15-1).

e. Supported Unit's Command Net FM. Each Vulcan and Chaparral platoon is equipped to operate in the command net of any divisional unit they may be required to support. A liaison officer from the Chaparral/Vulcan battalion normally will be located with the supported unit and will operate a station in the supported unit command net. In the Vulcan and Chaparral batteries, the executive officer monitors the supported unit command net. In the Vulcan battery, the platoon sergeant also monitors the supported unit command net (figs. 15-1, 15-2, and 15-3).

15-5. Internal Radio Nets

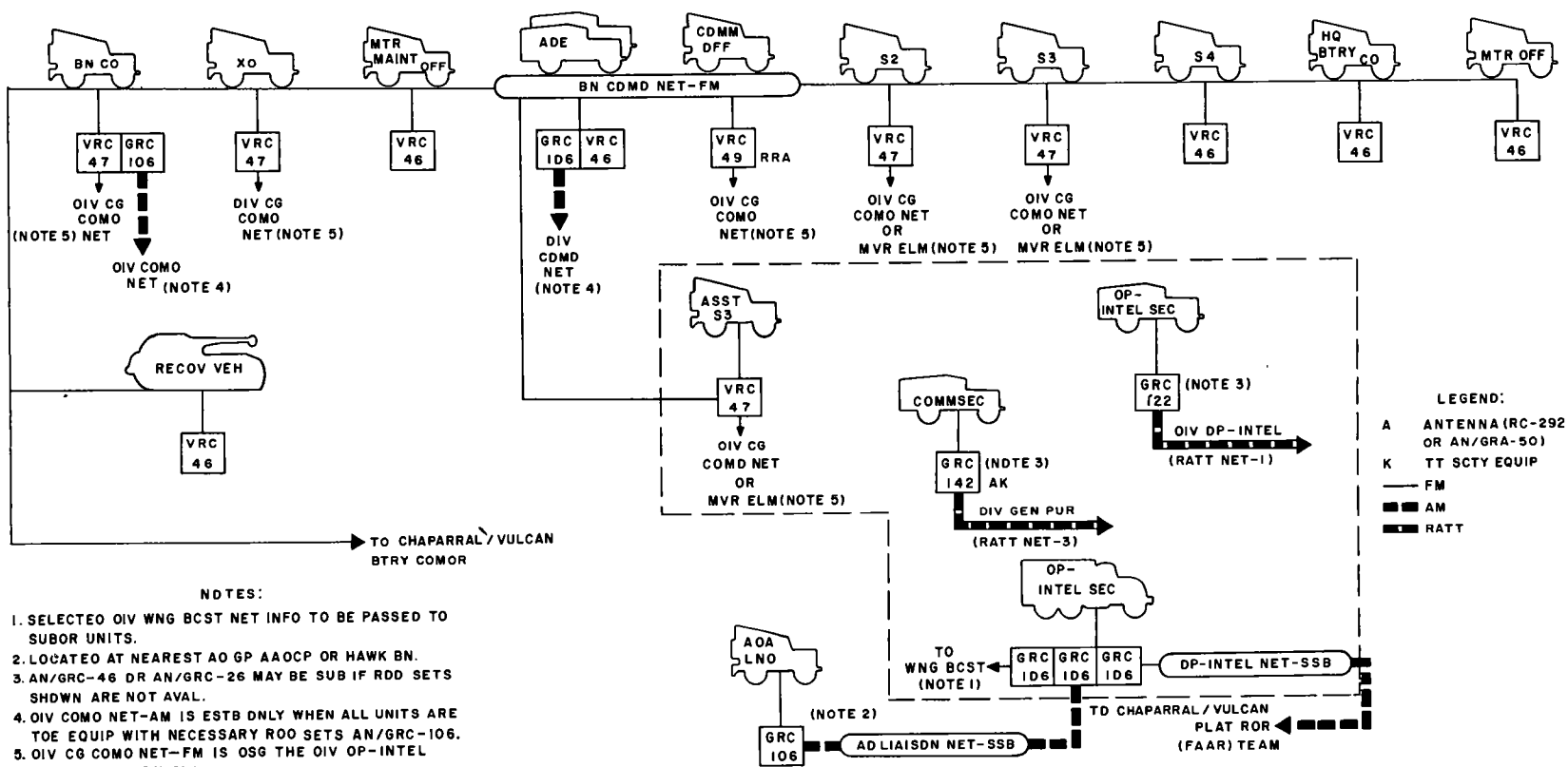
a. Battalion Command Net (FM). The battalion commander, battalion staff, air defense element (ADE) of the DTOC, and battery commanders operate in this net (fig. 15-1).

b. Air Defense Liaison Net—AM. This net is used to exchange air defense operational and intelligence information between the battalion headquarters and the nearest air defense group or Hawk battalion army air defense command post (AADCP). The battalion provides personnel and equipment for the station in this net (fig. 15-1).

c. Operations/Intelligence Net AM. This is a two-way net between the battalion headquarters and the FAAR. It is used to exchange battalion early warning, operational, and intelligence information and instructions. This net may be monitored at ADA battery level.

d. Battery Command Net—FM. This net includes the battery commander, executive officer, platoon leaders and other battery elements (figs. 15-2 and 15-3).

e. Platoon Operational Command Net—FM. The platoon leader, platoon sergeant (in Vulcan battery), platoon FAAR, and the Vulcan and Chaparral fire units operate in this net (figs. 15-2 and 15-3).



NDTES:

1. SELECTED OIV WNG BCST NET INFO TO BE PASSED TO SUBOR UNITS.
2. LOCATED AT NEAREST AO GP AAOCP OR HAWK BN.
3. AN/GRC-46 DR AN/GRC-26 MAY BE SUB IF RDD SETS SHDWN ARE NOT AVAL.
4. OIV COMO NET-AM IS ESTB DNLY WHEN ALL UNITS ARE TOE EQUIP WITH NECESSARY ROO SETS AN/GRC-106.
5. OIV CG COMO NET-FM IS OSG THE OIV OP-INTEL NET-FM IN ABN OIV.

Figure 15-1. Type radio nets, headquarters and headquarters battery, ADA battalion, Chaparral/Vulcan.

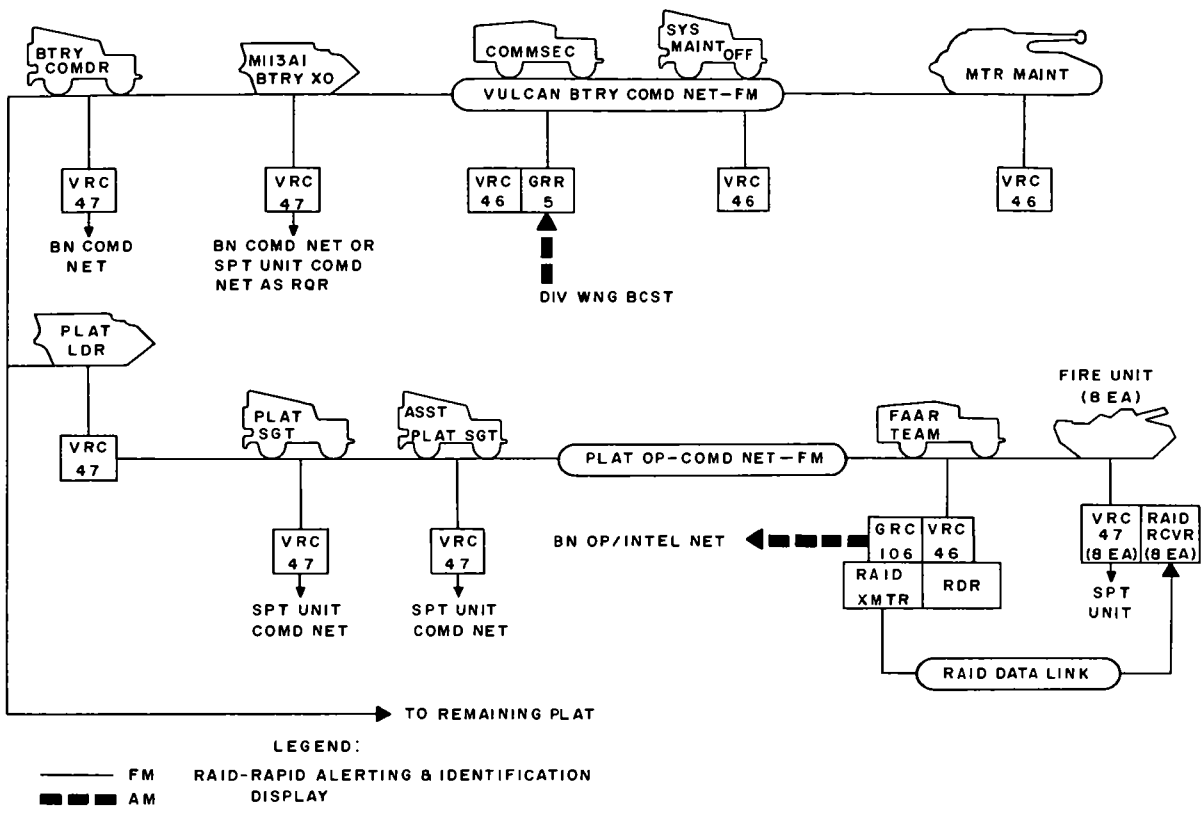


Figure 15-2. Type radio nets, Vulcan battery, ADA battalion, Chaparral/Vulcan.

f. Rapid Alerting and Identification Device (RAID). This is a one-way digital data link from the FAAR to the Chaparral and Vulcan fire units. The system provides tentative direction, identification, and early warning of alert radar—acquired airborne targets to the fire unit (figs. 15-2 and 15-3).

15-6. Battalion Wire System

a. Headquarters and headquarters battery installs lines from the battalion switchboard to each headquarters section, the local security loop, and firing battery headquarters. The firing batteries lay lines from battery headquarters to the platoon switchboards and intra-battery lines as required. Platoons lay lines to their fire units and the FAAR. When required, lines are laid to the supported unit (figs. 15-4, 15-5, and 15-6).

b. The land-line teletype link to the message center provides a circuit for high volume traffic through the division communication system.

c. When the tactical deployment of batteries or platoons makes wire laying impractical (due to distance, location, etc.), the deployed units may tie into the nearest division communications system facility, or into the switchboard of an adjacent unit, and employ common-user communications facilities to communicate with their parent headquarters.

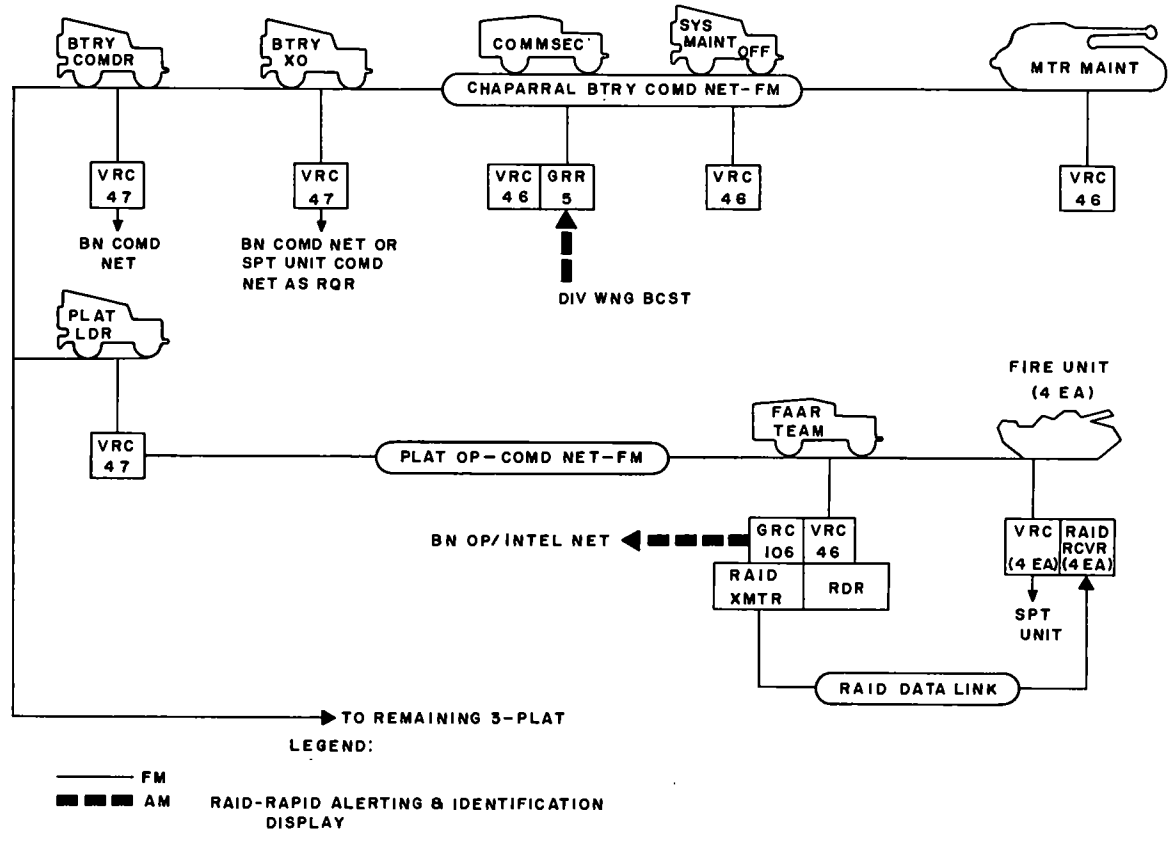
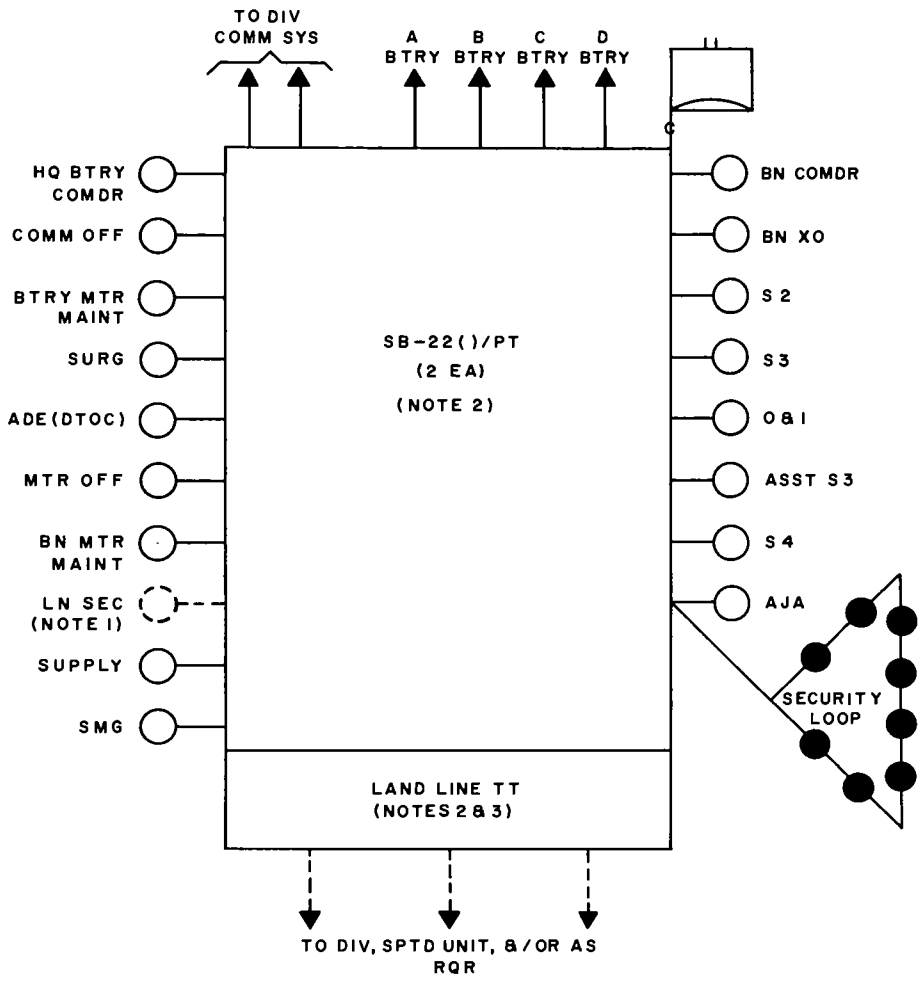


Figure 15–3. Type radio nets, Chaparral battery, ADA battalion, Chaparral/Vulcan.



LEGEND:

○ TELEPHONE SET TA-312/PT

● TELEPHONE SET TA-1/PT

NOTES:

1. TA-312/PT NORMALLY CARRIED BY BN LN OFF FOR CONEC INTO SPTD UNIT WIRE SYS OR DIV COMM SYS.
2. MOUNTED IN AN/GSQ-80.
3. LAND LINE TT INCLUDES AN/PGC-1, AN/GGC-3, AN/TCC-29, TSEC/KL-7, & TSEC-KW-7.

Figure 15-4. Type wire system, headquarters and headquarters battery, ADA battalion, Chaparral/Vulcan.

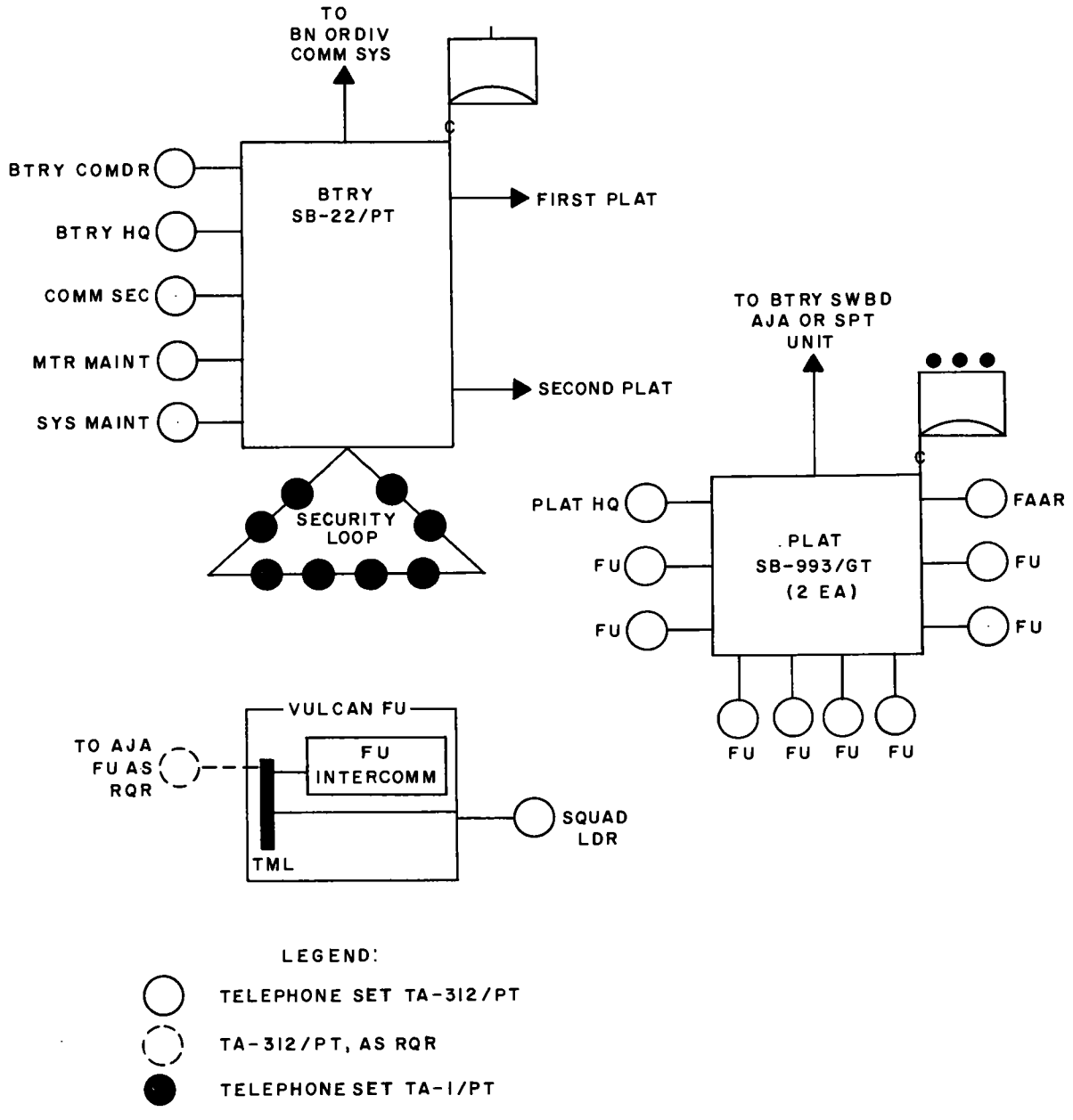


Figure 15–5. Type wire system, Vulcan battery, ADA battalion, Chaparral/Vulcan.

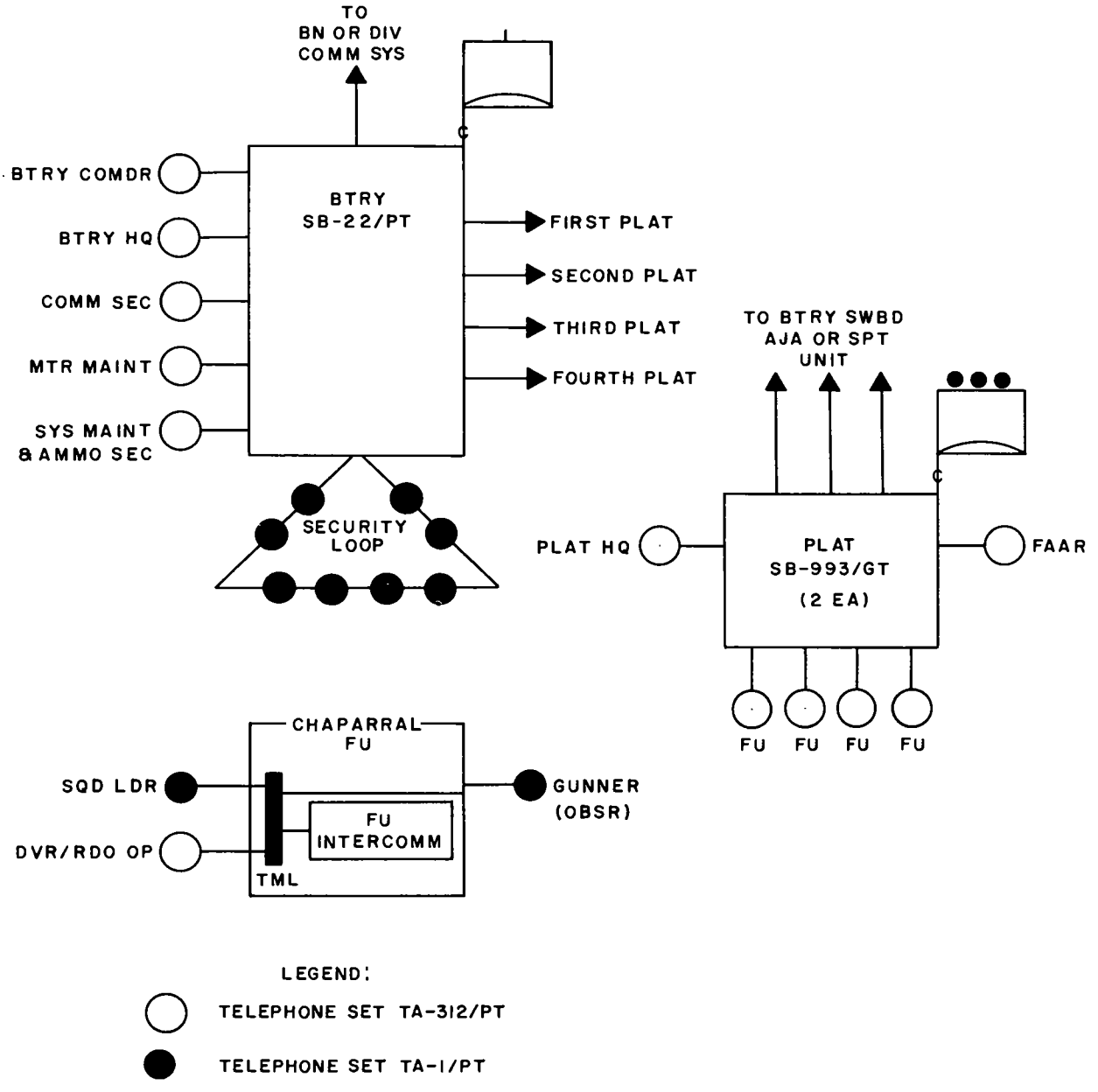


Figure 15-6. Type wire system, Chaparral battery, ADA battalion, Chaparral/Vulcan.

Section III. M42 COMMUNICATION SYSTEM

15–7. External Radio Communications

a. Division General Purpose Net (RATT Net No. 3) AM. The battalion communications section operates a station in this net (fig. 15–7).

b. Division CG Command Net—FM. The battalion commander and the communications section operate stations in this net (fig. 15–7).

c. Division Warning Broadcast Net Voice—AM. This net is monitored by the battalion operations and intelligence section, radar section, and each battery headquarters (figs. 15–7 and 15–8).

d. Division Optrations-Intelligence Net (RATT Net No. 1). If an M42 ADA battalion headquarters station is required in this net, it will have to be established and operated by a radio team from the division signal battalion.

15–8. Internal Radio Nets

a. Battalion Command Net—FM. The battalion commander, selected battalion staff officers, battery commanders, and platoon leaders are provided with a dual receiver capability to permit operation in the battalion command net or other designated nets. Each gun is capable of transmitting and receiving in the appropriate command net (figs. 15–7 and 15–8).

b. Early Warning-Intelligence Net—AM. The battalion radar section and each observer team operates in this net. Each gun section monitors this net. This long range AM net provides the ground aircraft observers and the radar section the capability to transmit warning and intelligence directly to each ADA automatic weapon squad (figs. 15–7 and 15–8).

c. Air Defense Control Net—AM. The battalion operations/intelligence section, and battery and platoon command posts operate stations in this net (figs. 15–7 and 15–8).

15–9. Battalion Wire System
(fig. 15–8)

The wire system is used to augment the radio nets where collocation is not possible. Lines are installed to parallel the radio nets in order to insure redundance of communications. As time permits, lines are installed to the supported unit.

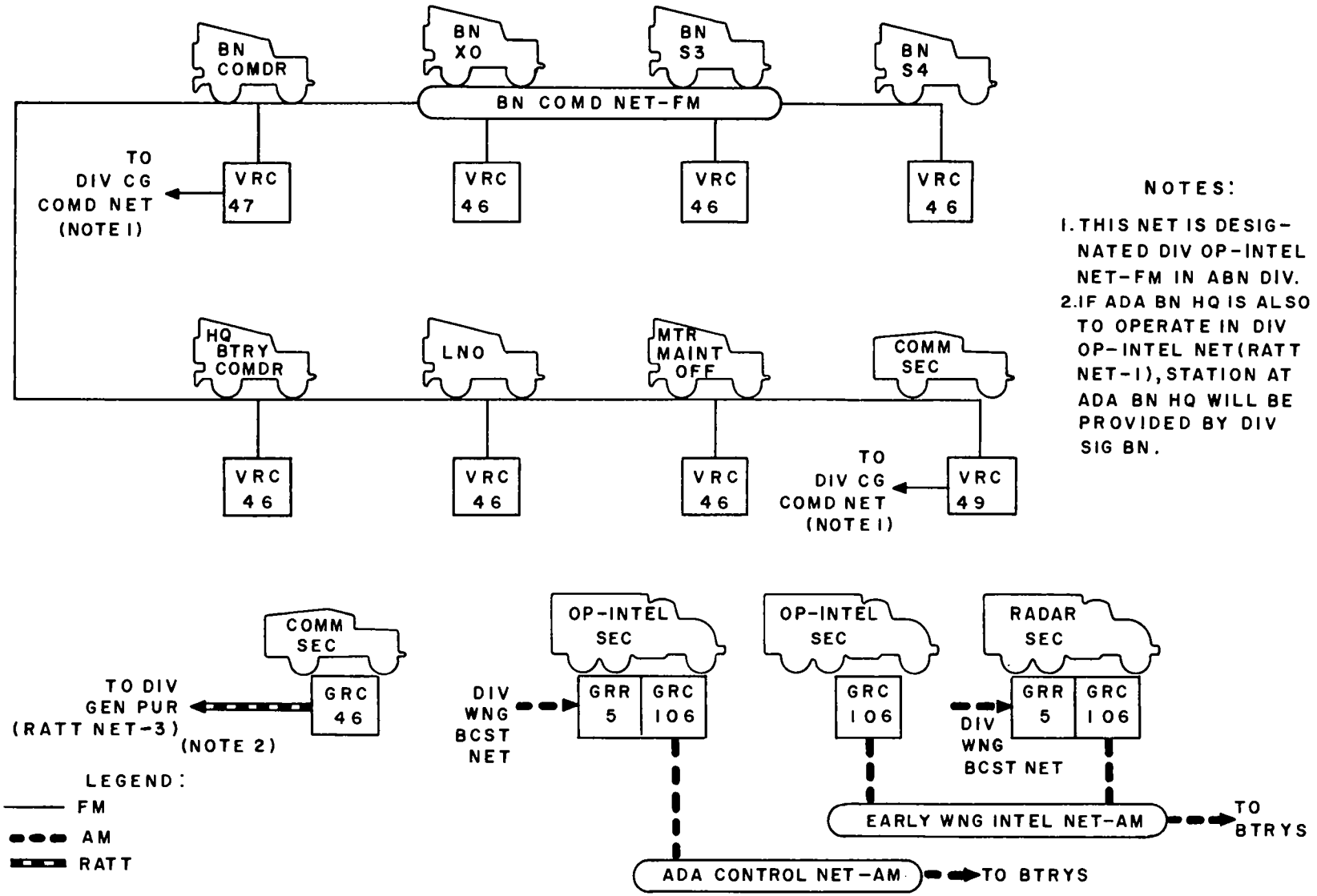


Figure 15-7. Type radio nets, headquarters and headquarters battery, ADA automatic weapons battalion (M42).

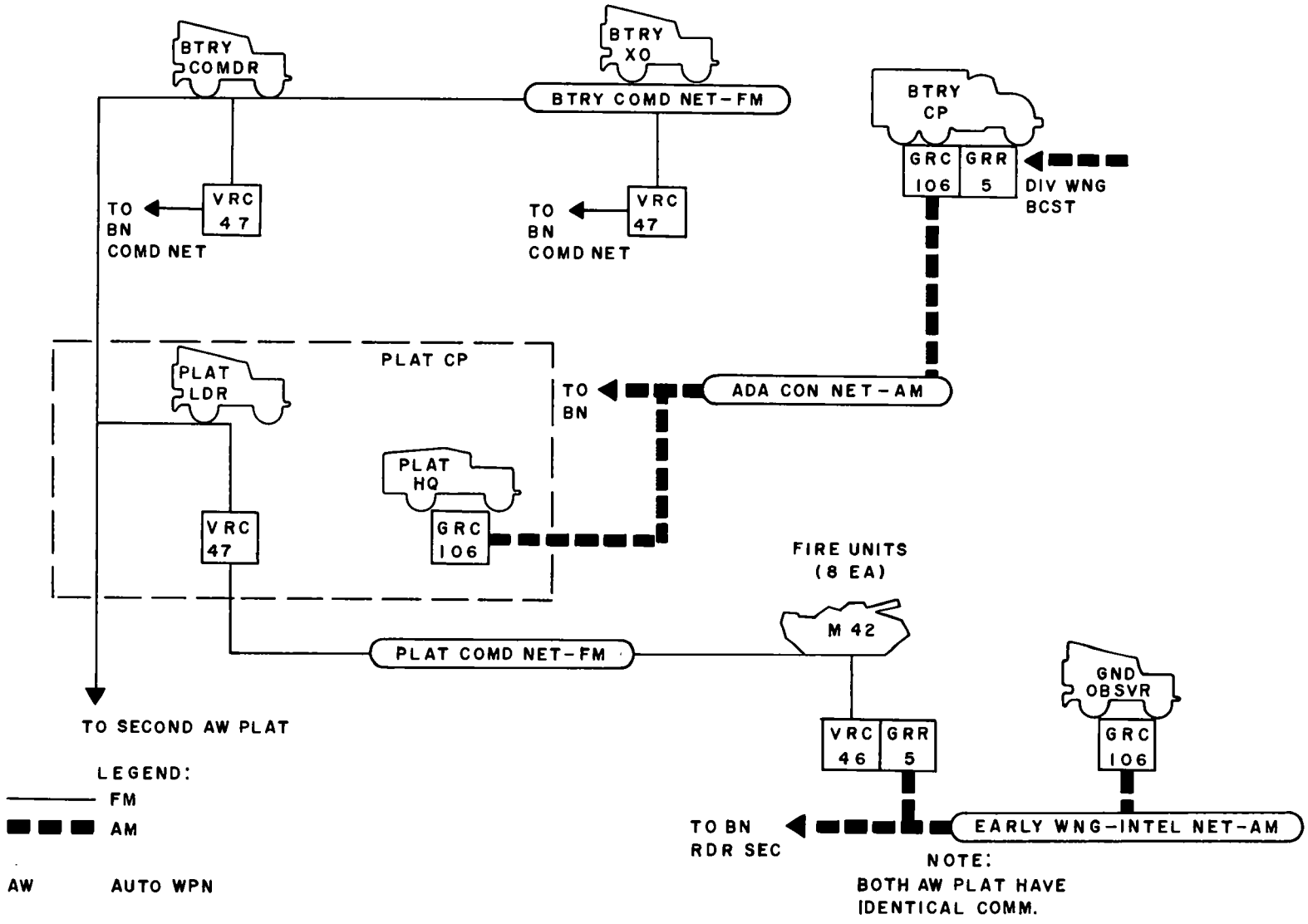


Figure 15–8. Type radio nets, automatic weapons battery, automatic weapons battalion (M42).

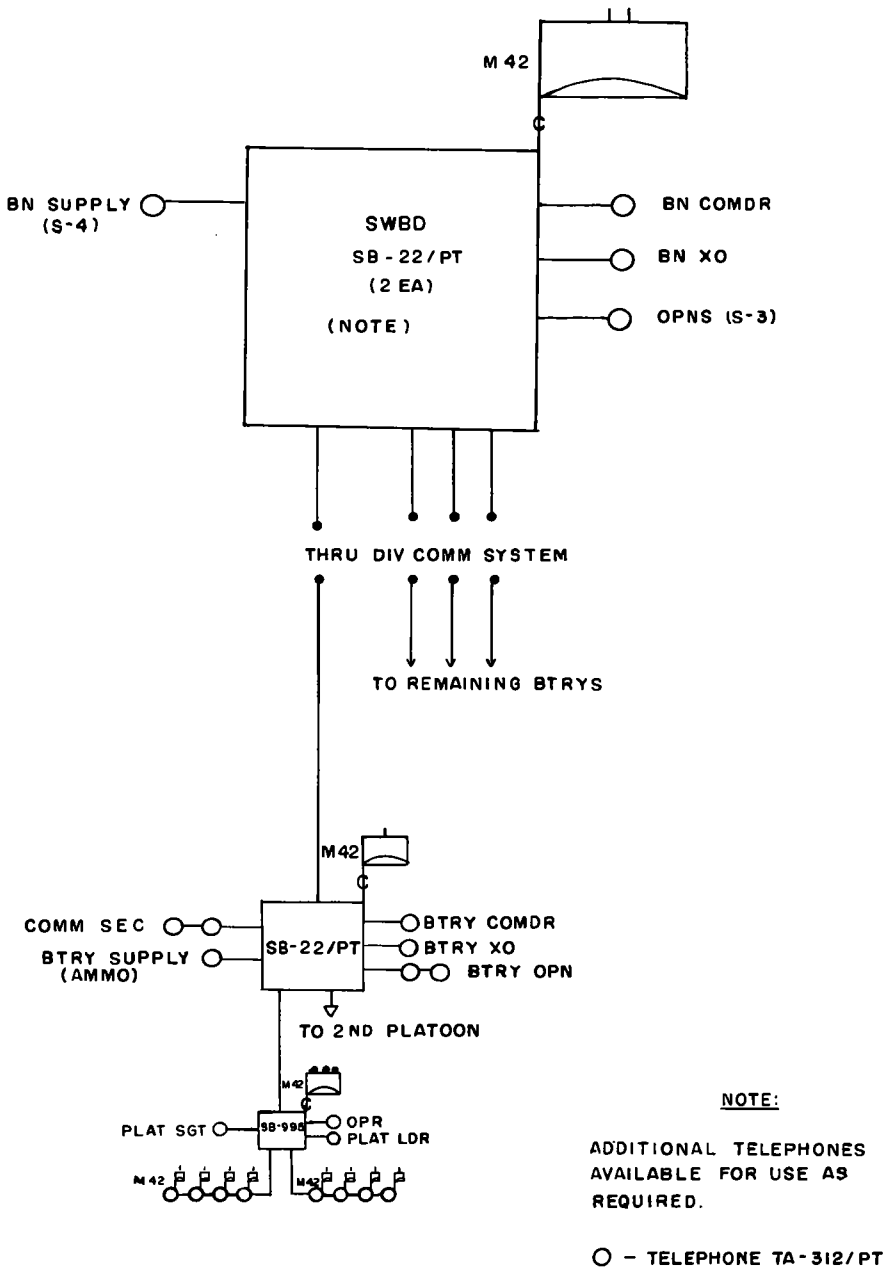


Figure 15–9. Type wire system, ADA Automatic Weapons battalion (M42).

PART TWO

COMMUNICATIONS IN AIRBORNE DIVISION

CHAPTER 16

COMMUNICATIONS IN HEADQUARTERS AND HEADQUARTERS COMPANY, AIRBORNE DIVISION

16–1. Mission

Division headquarters provides command, control, and supervision of the operations and administration of the division and its attached units. The headquarters company provides the logistical support and personnel for the division headquarters. A more detailed discussion of the division headquarters and headquarters company is contained in FM 61–100. Refer to TOE 57–4.

16–2. Organic Communications

a. Radio Communications. The airborne division headquarters and headquarters company provides the organic radio sets illustrated in figure 16–1. Note that these radio sets are operated in an FM-voice operations-intelligence net and in a division command net which utilizes SSB-voice.

b. Weather Communications. A weather section is included in the division headquarters and headquarters company. Only trucks, truck-drivers, and telegraph-telephone equipment are provided by the army; the Air Force provides a staff (division) weather officer, airmen an meteorological peculiar equipment. Normally, the weather section is provided adequate circuits for communications from airborne division headquarters to the counterpart facility at the next higher headquarters. The next higher army headquarters above airborne division will provide the terminating equipment at airborne division headquarters for weather circuits. Refer to AR 115–10.

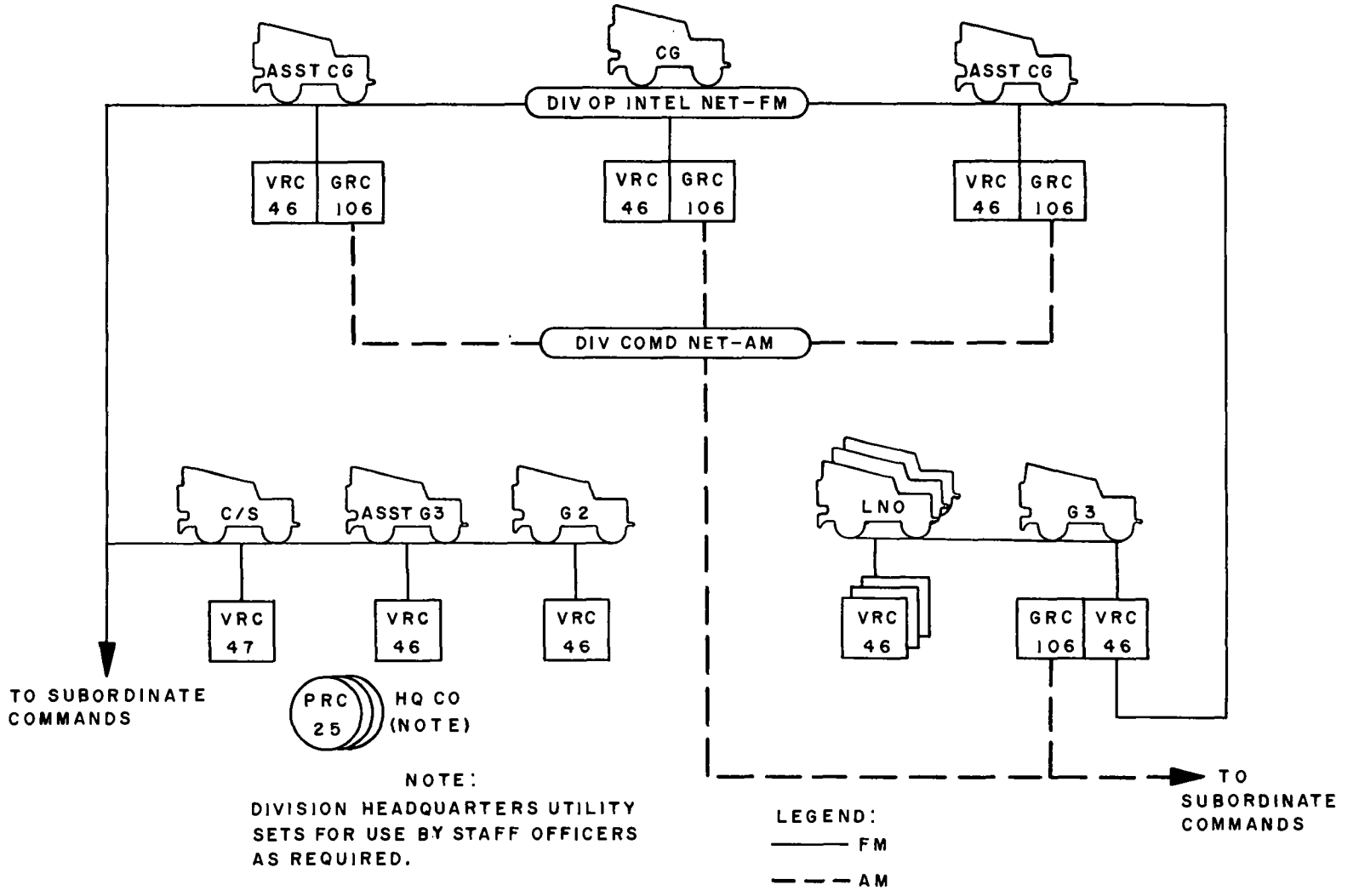


Figure 16–1. Type employment of radio sets, headquarters and headquarters company, airborne division.

CHAPTER 17

COMMUNICATIONS AT DIVISION LEVEL (AIRBORNE DIVISION)

Section I. SIGNAL BATTALION, AIRBORNE DIVISION

17–1. Battalion Components (fig. 17–1)

a. General. A division signal battalion is organic to each airborne division. This battalion is part of the combined arms team and provides division-level communication support for the division.

b. Organization of the Battalion. The airborne division signal battalion consists of a headquarters and headquarters company, a signal command operations company (Company A), and a signal support operations company (Company B). The mission and functions of the battalion and its component companies are discussed briefly in the paragraphs immediately following. For more complete coverage of the organization, mission, capability, and operation of the airborne division signal battalion and its component companies, refer to FM 11–57 and TOE 11–215.

17–2. Mission of Airborne Division Signal Battalion

The mission of the airborne division signal battalion is to—

a. Provide signal communications for the echelons of an airborne division support command headquarters.

b. Establish, operate, and maintain a division common-user signal communications system.

c. Provide multichannel communications service to brigade headquarters, support command headquarters, and other assigned or attached major subordinate units operating direct ly under division headquarters.

d. Perform direct support maintenance of cryptographic equipment in the division and organizational maintenance of equipment organic to the signal battalion.

17–3. Capabilities

To implement its mission requirements at full strength, the division signal battalion has the capability to—

a. Command, control, and staff supervise organic and attached signal units.

b. Provide the signal staff to plan and supervise communications, communications training, and other related activities of the division—this includes technical assistance on signal communications matters.

c. Install, operate, and maintain a maximum of six signal centers on a 24-hour basis: one signal center each at the main and alternate

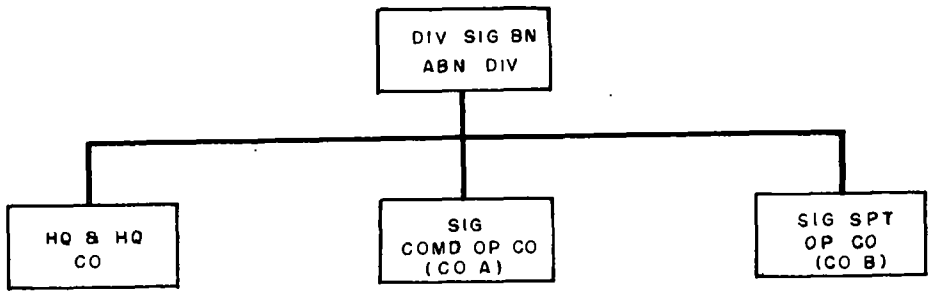


Figure 17–1. Signal battalion, airborne division.

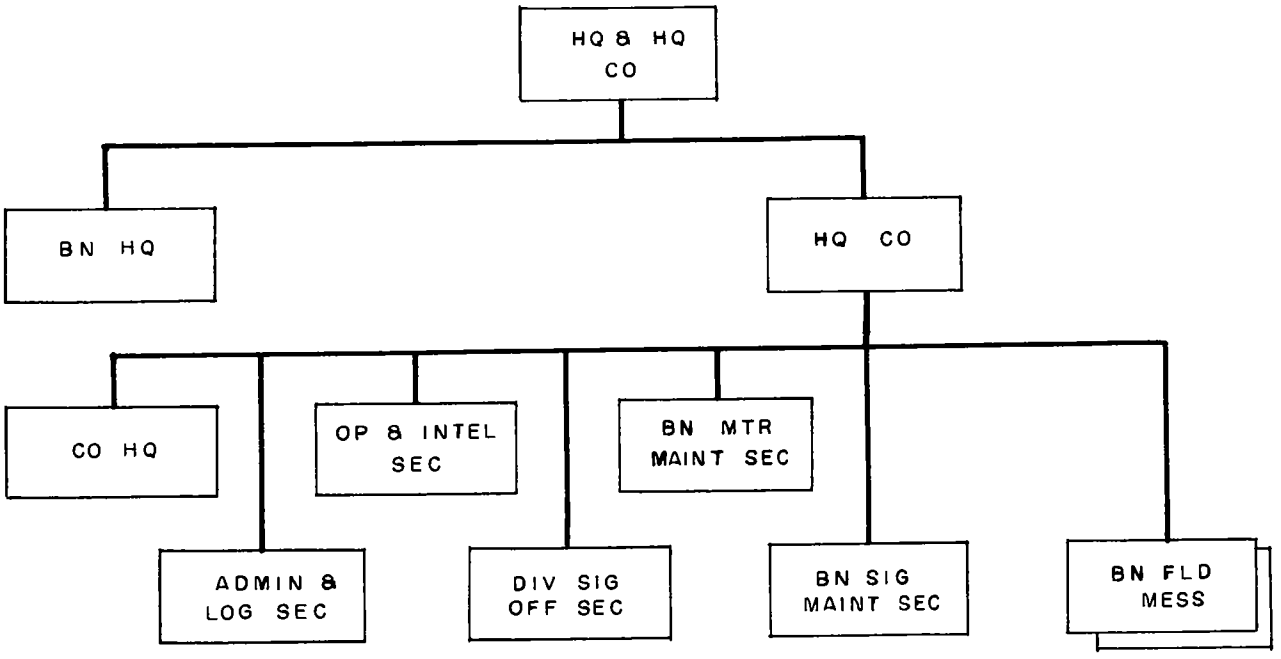


Figure 17–2. Headquarters and headquarters company, signal battalion, airborne division.

echelons of division headquarters; one in each of the three brigade areas; and one at support command headquarters. Refer to paragraphs 17–5 and 17–6 for further details.

d. Install, operate, and maintain 24-hour operation of a communication center and a telephone switching central at the division rear echelon.

e. Install, operate, and maintain a multichannel radio terminal and RWI station respectively at division artillery and aviation battalion headquarters.

f. Perform direct support maintenance of cryptographic equipment for the division.

g. Perform organizational maintenance on equipment organic to the signal battalion.

17–4. Headquarters and Headquarters Company

(fig. 17–2)

a. Mission and Capabilities. The mission and full strength capabilities of the headquarters and headquarters company are summarized in (1) through (4) below.

(1) Direction and coordination of operations and training of the battalion and provision of headquarters facilities with which the battalion commander exercises control.

(2) Providing the division with a signal officer, a signal staff, and required staff facilities.

(3) Providing supplemental administrative and logistics support for the operating companies of the battalion. This support includes—liaison with the division administration company; organizational maintenance of signal equipment and supplemental automotive maintenance for the battalion; organizational maintenance of power generator equipment supplementary to the capabilites of companies A and B; and operation of one consolidated mess or two field messes.

(4) Performance of limited direct support maintenance of cryptographic equipment of the division and organizational maintenance of organic company equipment.

b. Organization. The company is organized into a battalion headquarters, company headquarters, administrative and logistics section, operations and intelligence section, division signal officers section, battalion motor maintenance section, battalion signal maintenance section, and two battalion field messes. The function of each element is identifiable from its title and can be readily associated with the mission and capabilities already given.

17–5. Signal Command Operations Company

(fig. 17–3)

a. Mission and Capabilities. The mission and full strength capabilities of the signal command operations company are summarized in (1) through (5) below.

(1) Provision, on a 24-hour basis, of signal centers for two echelons of division headquarters (main and alternate) to include—

(*a*) Message center, motor messenger, cryptographic, and teletypewriter facilities.

(*b*) Manual telephone switchboard and local telephone service.

(*c*) Radio net control and other stations in internal division radio nets including FM RWI stations.

(*d*) Patching and switching facilities for wire and multichannel radio trunk circuits in the division communications system.

(*e*) Establishment and operation of an assigned portion of the division multichannel network to include the operation of multichannel radio and telephone carrier terminal stations.

(2) Provision of signal center service for units located in the vicinity of division headquarters signal centers—this service will in-

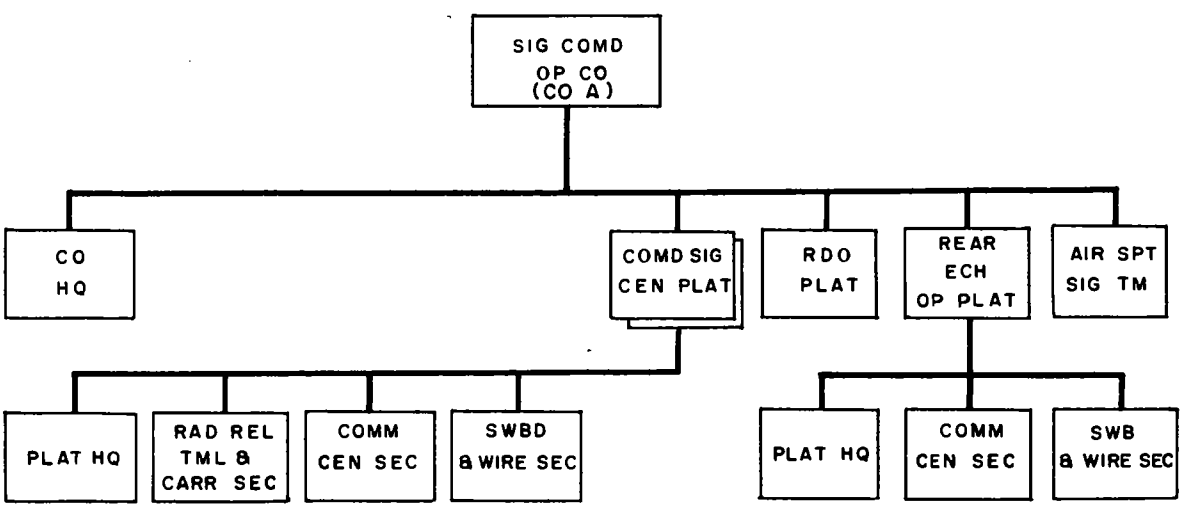


Figure 17–3. Signal command operations company, signal battalion, airborne division.

clude the handling of message traffic and the provision of telephone switching service and connecting lines—all service is supplemental to the organic facilities of the unit being supported.

(3) Establishment and operation at division rear of a communications center and telephone switchboard to include local telephone service.

(4) Provision of air request radio communications at division headquarters.

(5) Provision of organizational automotive and power generator maintenance.

b. Organization. The company is organized into a company headquarters, two command signal center platoons, a radio platoon, a rear echelon operations platoon, and an air support signal team. The function of these component elements follows:

(1) *Command signal center platoons.* These two platoons establish, operate, and maintain command signal centers at division main and division alternate respectively.

(2) *Radio platoon.* This platoon is fragmented to operate the following radio facilities at division main and alternate: SSB-RATT equipments; SSB or FM voice radio equipment; RWI equipment.

(3) *Rear echelon operations platoon.* This platoon provides personnel and equipment to install and operate communications facilities at the division rear echelon. The facilities operated basically comprise a communications center plus telephone switching service.

(4) *Air support signal team.* This team operates the communications facilities for the TASE and DTOC. When required, the team will supplement or provide communications for the Air Force TACP operating at division level. Note that the air support signal team is comparable to the air control teams (ACT) authorized at brigade, battalion, and squadron levels.

17–6. Signal Support Operations Company

a. Mission and Capabilities. The mission and full strength capabilities of the signal support operations company are summarized in (1) through (4) below.

(1) Provision, on a 24-hour basis, of three forward signal centers (in each grigade area) to include at each signal center—

(*a*) Message center, limited motor messenger, cryptographic, and teletypewriter facilities.

(*b*) Manual telephone switchboard service and telephone and teletypewriter trunks to brigade headquarters.

(*c*) RATT stations for access into division nets.

(*d*) An FM RWI station.

(*e*) Multichannel radio and carrier terminals for access into the division multichannel radio networks.

(*f*) Signal center service is extended to brigade headquarters, a support command forward service support element, and to other units in the vicinity—the service available is supplementary to the organic capabilities of the supported units.

(2) Provision, on a 24-hour basis, of a signal center at support command headquarters to include—

(*a*) Message center, motor messenger, cryptographic, and teletypewriter facilities.

(*b*) Manual telephone switchboard and a local telephone subscriber system.

(*c*) RATT stations for division radio nets.

(*d*) An FM RWI station and an FM radio automatic retransmission station.

(*e*) Multichannel radio and carrier terminals in the division multichannel radio network.

(*f*) Extension of area signal center support to units located in the vicinity of support command headquarters—such support is supplementary to the organic capabilities of the units being supported.

(3) Provision of two teams for signal communication support at division artillery and aviation battalion headquarters—each team provides—

(*a*) RATT stations for access into division nets.

(*b*) An FM RWI station.

(*c*) Multichannel radio and carrier terminal stations for access into the division multichannel radio network.

(4) Provision of organizational automo-

tive and power generator maintenance for the company.

b. Organization. The company is organized into a company headquarters, a support command operations platoon, three forward area signal center platoons, and a general purpose platoon. A summation of the function of each company element follows:

(1) *Company headquarters.* The company headquarters includes the company commander and other personnel associated with the command and administration of the company.

(2) *Forward area signal center platoon.* Each of the three forward area signal center platoons is organized and equipped to provide operation of a signal center in a forward area of the division. Each signal center established provides support for brigade headquarters, a support command forward support element, as well as other units and activities located in the area, for support of the division.

(3) *Support command operations platoon.* This platoon is organized to provide the personnel and equipment required to install and operate a signal center at support command headquarters. The platoon also provides area communications support for division units and other activities supporting the division, located in the vicinity of support command headquarters.

(4) *General purpose platoon.* This platoon is organized and equipped to install and operate division communications facilities both at division artillery and at aviation battalion headquarters. In addition, the platoon provides multichannel radio terminals and associated carrier equipment for the extension of multichannel communications links and for special purposes as required.

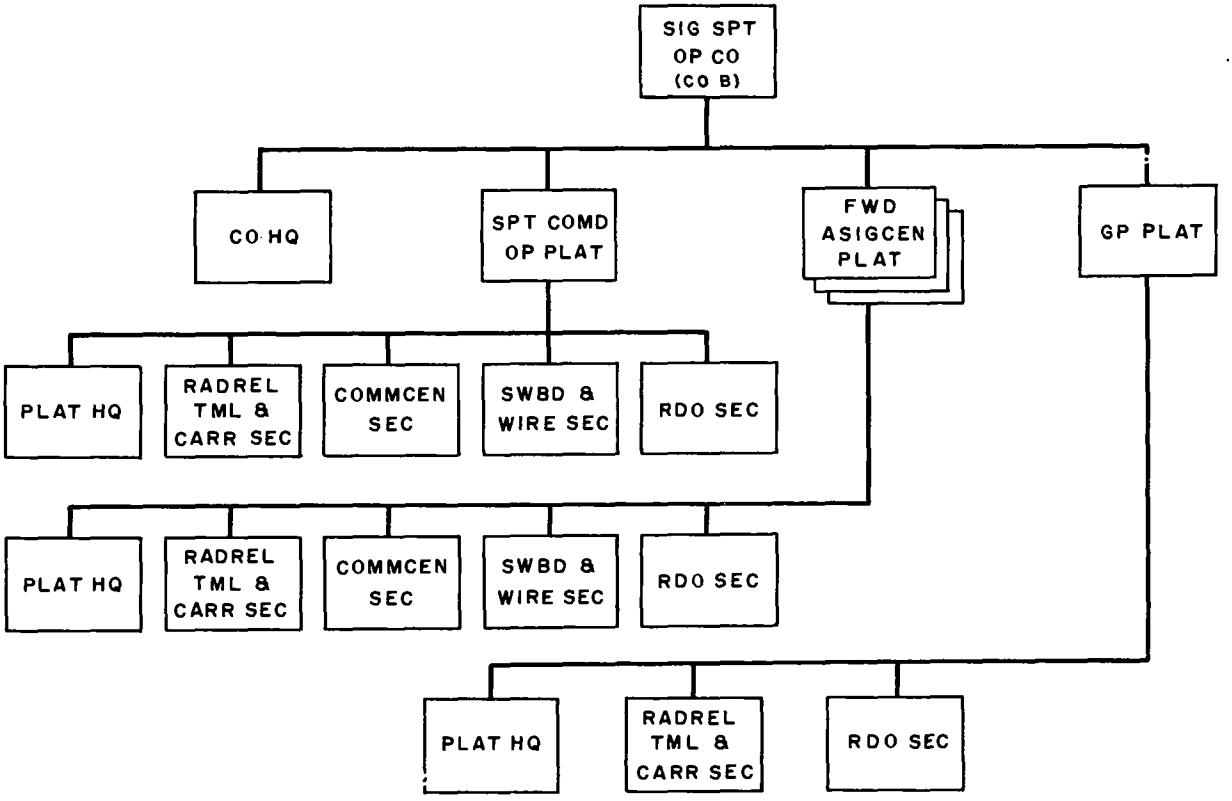


Figure 17–4. Signal support operations company, signal battalion, airborne division.

Section II. AIRBORNE DIVISION COMMUNICATION SYSTEM

17-7. Signal Communication Concepts

Signal communication concepts are based upon the broad concept of fragmentation of division and subordinate command headquarters.

a. The airborne division signal communication system must support the concept of "headquarters fragmentation" by providing functional and flexible signal communication support to interconnect each operational echelon of the division headquarters and all major subordinate combat and combat support units.

b. The airborne division signal communication concept visualizes emphasis on a command-oriented signal communication system, i.e., the system will parallel the lines of command, and priority will be given to employment and location of signal centers and communication facilities to support division maneuver and combat support elements.

c. Combat service support units obtain their communication support from the area coverage existing in the command-oriented system. An area signal system as a separate entity is not provided by the airborne division signal battalion.

d. Communications are oriented forward, i.e., when feasible, the superior headquarters will furnish the equipment and personnel needed to provide communications to a subordinate headquarters. The exceptions to this policy in the airborne division signal communication system are—

(1) The armored cavalry squadron headquarters and the engineer battalion headquarters use organic equipment and personnel to enter the operations-intelligence and the administrative logistics net (SSB–RATT). Normally, the division signal battalion does not provide a RATT team for operations at armored cavalry squadron headquarters.

(2) Major subordinate commanders as well as certain division staff officers retain the organic capability to enter the division AM and FM voice radio nets.

e. The division telephone and teletypewriter system will be comprised primarily of common-user circuits and can be justified only by operational necessity or traffic volume. For the former, there must be a clear doctrinal basis which requires continuous contact between the points; for the latter, there must be sufficient essential traffic to occupy the circuit for at least one-third of the time, making the sole-user circuit the most economical solution. Sole-user circuits will be kept to a minimum. Strict adherence to this concept is especially imperative in the airborne division where weight and size considerations have necessitated use of multichannel equipments with very limited circuit capacity.

f. When the tactical situation permits, messenger service affords the most reliable service and often the fastest means of communications. This is particularly true for detailed reports and requests that must be absolutely accurate and/or are lengthy. Total disregard of the capabilities of ground and air messengers in favor of almost complete reliance on electrical transmission systems should be avoided.

17-8. Composition of the System

The division signal communication system established and operated by the signal battalion, airborne division, will normally include signal centers at division main and alternate headquarters, at the support command CP, at three forward sites in the brigade areas, and a communications center and telephone switching central at the division rear echelon. The system is usually composed of the following means of communications:

a. Multichannel (radio relay) links.
b. Tactical SSB and FM radio nets.
c. Ground and air messenger support.
d. Radio wire integration system.

17-9. Responsibility

As in other type divisions, the airborne DSO commands the signal battalion and is responsible to the commanding general for planning, installing, operating, and maintaining the division communication system. Signal responsibilities are discussed in detail in chapter 2.

17–10. Characteristics of the Multichannel Network

a. In the airborne division, the multichannel network carries the bulk of all electrical traffic. Multichannel facilities (radio relay), therefore, represent the primary means of providing telephone and teletypewriter circuits within the division.

b. In practice, the multichannel network of the airborne division is command oriented, i.e., priority is given to command-control communications, with area requirements being provided where possible.

c. The airborne division multichannel network is composed of relatively lightweight, reliable, and simple to operate equipment which can be installed and displaced with a minimum of delay.

d. Multichannel radio is the primary means of furnishing signal communications. Carrier equipment is used in conjunction with radio equipment to provide the necessary multichannel links. Spiral-four cable is not normally used in the airborne division.

e. The multichannel network of the airborne division has a relatively low circuit capacity when compared with that available to an infantry, armored, or mechanized division. A four-channel carrier system is utilized due to

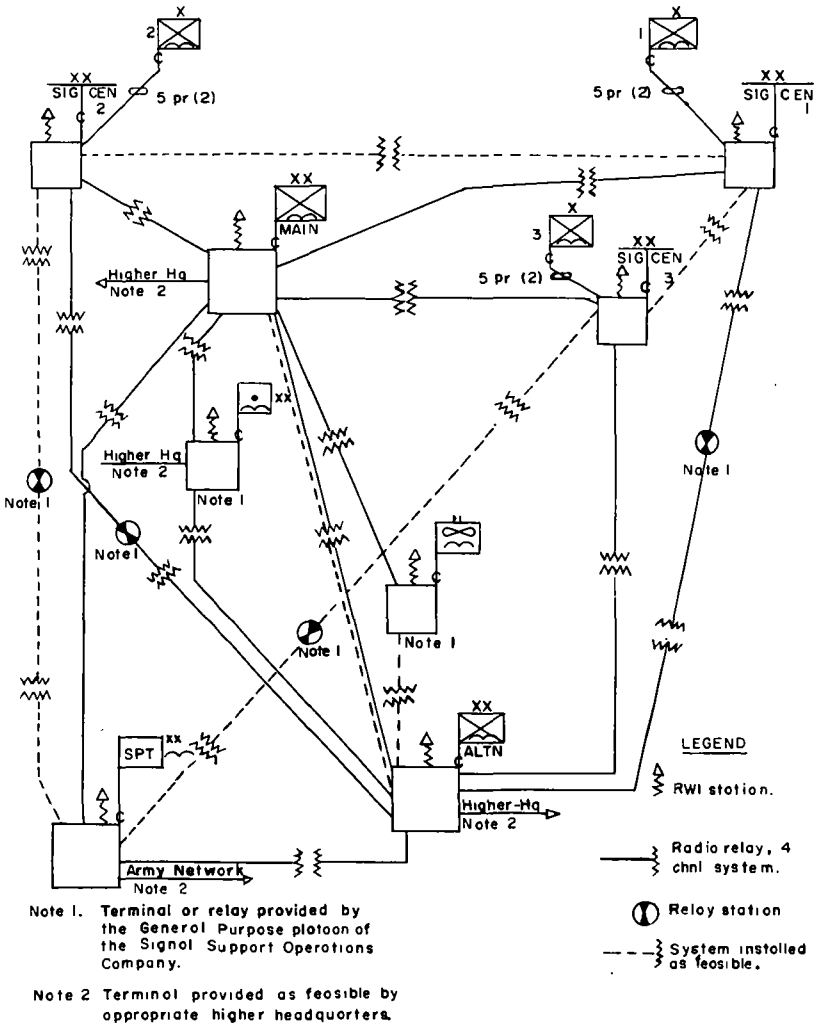


Figure 17–5. Type configuration of the multichannel portion of the airborne division communications system.

size and weight limitations which preclude use of higher capacity equipment.

17–11. Configuration

a. A type configuration for the multichannel radio network of the airborne division is illustrated by figure 17–5. Current equipment and personnel levels for the airborne signal battalion authorize sufficient resources to establish and maintain only the minimum essential multichannel links and to provide for a limited rapid displacement capability. The minimum essential links are installed as a norm and are designated as command or *primary links*. Primary links are shown by the solid lines in figure 17–5. Secondary links are also shown by broken lines in the figure; these links may be activated when feasible to augment the basic system.

b. During link-up operations or when the airborne division is operating as an interior defensive force, multichannel lateral links may be required to adjacent forces. If, however, multichannel lateral links are not feasible, lateral communications may be maintained by radio or field wire.

17–12. Command Radio Relay Links

a. General. The command or primary multichannel links provide the minimum essential circuits required for command, control, combat, and combat service support communications. All these links emanate from either division main or division alternate. Subordinate units should always attempt to pass traffic direct to the appropriate command post and thus avoid relay or retransmission delays; however, passing of traffic to either division echelon by subordinate units is normally considered to constitute delivery to division headquarters. Current operational traffic received at either division echelon should be passed to the other echelon, when appropriate, as a matter of SOP.

b. Installation and Restoration Priorities. It is the DSO's responsibility to establish installation and restoration priorities for each specific operation; however, an SOP should be developed for routine or standard type situations. A recommended order of priority for installation or restoration of command links follows:

(1) From division main to—

(*a*) Forward area signal centers in committed brigade areas.

(*b*) Division artillery.

(*c*) Division support command.

(*d*) Division aviation battalion/airfield.

(*e*) Forward area signal center in reserve brigade area.

(*f*) Division alternate.

(2) From division alternate to—

(*a*) Forward area signal centers in committed brigade areas.

(*b*) Division artillery.

(*c*) Division support command.

(*d*) Forward area signal center in reserve brigade area.

(*e*) Division aviation battalion/airfield.

17–13. Secondary Radio-Relay Links

Due to the low circuit capacity and the limited equipment available, the command links of the multichannel network satisfy only minimum circuit needs and afford a very limited alternate routing capability. The link between division main and alternate is the sole command link which will permit limited alternate routing; however, the primary purpose of this link is to connect the two CP's to insure that information maintained at both locations is up-to-date. Additional secondary links should be established when feasible to afford greater reliability and survivability through the alternate routing thus provided; these additional secondary links also increase the speed of message handling and give the system a greater flexibility.

a. One possible source of additional radio-relay links might be from prudent use of "displacement" equipments. When movement is not imminent, equipment authorized for displacement should be put into operation. It must be stressed, however, that these multichannel radio equipments should not be committed indiscriminately and thus hinder their original intended purpose.

b. The general purpose platoon, signal support operations company, is another possible source of multichannel radio equipment. This platoon is authorized five relays to extend the range of the multichannel network. If not re-

quired for this purpose, the sets available may be otherwise employed to enlarge the system.

17–14. Types of Circuits

Communications to support the functions of command-control, operations-intelligence, fire support, and administration-logistics generate requirements for differing types of circuits. The multichannel network of the airborne division normally provides common-user and sole-user telephone circuits and common-user teletypewriter circuits.

a. Common-User Telephone Circuits. The bulk of the circuits provided via the multichannel network are common-user telephone circuits. These circuits interconnect switchboards of the various signal centers and units, and are available to all subscribers for all types of functional communications. The DSO must insure that the common-user switched telephone network is comprehensive enough to enable any subscriber to reach any other subscriber within the division. A capability must also be provided to permit any subscriber to place calls outside the division area via circuits installed by supporting signal units of the higher headquarters.

b. Sole-User Telephone Circuits.

(1) A certain number of circuits are normally allocated on a full-time basis for the sole use of specific personnel or activities. There are a number of guidelines provided for determining justification for sole-user circuits, based upon traffic studies and other engineering factors. From a practical viewpoint, however, the only valid justification that can be accepted for diverting a circuit to sole-user use is operational need of high tactical urgency.

(2) The normal sole-user circuits established as standard doctrine in the airborne division are—

	Function
(*a*) DTOC (G3/G2) to brigade operations (S3/S2)	Command-control
(*b*) DTOC (FSE) to brigade operations (FSCC)	Combat Support
(*c*) DTOC at division main to DTOC at division alternate	Command-control

c. Teletypewriter Circuits.

(1) Teletypewriter operations in the airborne division are normally on a common-user basis.

(2) Half-duplex circuits are provided for teletypewriter operation over the multichannel network on a speech-plus basis. Subscribers are connected to the teletypewriter switching central at either division main or the alternate command post. Teletypewriter service for brigade trains and the forward support areas is furnished on an over-the-counter basis from the appropriate forward area signal center.

(3) Sole-user teletypewriter circuits are not normally employed within the airborne division.

17–15. Circuit Allocation

a. The number and types of circuits to be activated and the allocations to be made will vary with the situation.

b. When allocating circuits, first priority is given to the communication needs for command-control and combat support (operation-intelligence and fire support). Insofar as practicable, communications for the foregoing are met by command links of the multichannel system. Although priority for administration and logistics is lower than the command-control and operations-intelligence function, the resources allocated must fulfill minimum needs.

17–16. Multichannel Communications to Higher and Adjacent Headquarters

a. Concepts of operations and normal missions of the airborne division include many instances when normal field army area communications support for the division will not be available. Communications to higher or adjacent units in an airborne operation will often be of a specialized nature provided in accordance with the plan for the operation.

b. When an airborne division is operating in an established field army or separate corps area, it can expect to receive communication support comparable to that provided to any other type division.

(1) When appropriate, a corps signal battalion will provide multichannel radio terminals at division main and division alternate

DIVISION RADIO NETS, AIRBORNE DIVISION

UNIT \ NET	COMD NET SSB-VOICE	SSB RATT NETS 1 OP & INTEL	SSB RATT NETS 2 ADMIN & LOG	SSB RATT NETS 3 GENERAL PURPOSE	OP & INTEL NET FM-VOICE	WARNING BCST NET VOICE	AIR REQ NET SSB-VOICE	HIGHER HQ NETS
DIV MAIN	GRC-106 NCS (S)	VSC-2 NCS (S)	VSC-2 (S)	VSC-2 (S)	VRC-46 NCS (S)	GRC-106 NCS (S)	GRC-106 NCS (S)	
DIV CG	GRC-106				VRC-46			
each ADC (2)	GRC-106				VRC-46			Higher headquarters signal unit provides required terminals for entry into higher headquarters RATT nets as appropriate.
DIV STAFF	GRC-106 (3) *				VRC-46 (4) **			
DIV ALTN	GRC-106 (S)	VSC-2 (S)	VSC-2 (S)	VSC-2 (S)	VRC-46 (S)	GRC-106 (S)		
DIV ARTY	GRC-106 (2) CO & FDC	VSC-2 (S)	VSC-2 (S)		VRC-46 FDC	GRR-5 (13)		
each BDE (3)	GRC-106 (2) CO & CP	VSC-2 (S)		VSC-2 (S)	VRC-46 CP	GRR-5 (1)	GRC-106	
each INF BN (9)						GRR-5 (1)	GRC-106	
SPT COMD	GRC-106		VSC-2 NCS (S)	VSC-2 NCS (S)		GRR-5 (11)		
AVN BN	GRC-106 CP	VSC-2 (S)	VSC-2 (S)		VRC-49 CP	GRR-5 (3)		
CAV SQDN	GRC-106 (2) CO & CP	VSC-2	VSC-2		VRC-46 (2) S-3 & CP	GRR-5 (4)	GRC-106	
SIG BN	GRC-106 DSO				VRC-47 S3	GRR-5 (7) ***		
ENGR BN	GRC-106 CP	VSC-2	VSC-2		VRC-46/47 S-3 & CP	GRR-5 (4)		
MP Co	GRC-106 CP				VRC-47 monitor	GRR-5 (1)		
each Fwd Spt Area (3)			VSC-2 (S)					
**** ADA BN	GRC-106	VSC-2 (S)		VSC-2 (S)	VRC-47			

NOTES: (S) INDICATES EQUIP & PERS PROV BY SIG BN.

* ONE (1) AN/GRC-106 UTILIZED BY ACOFS G-3, TWO (2) AN/GRC-106 PROV TO COFS SEC TO BE UTILIZED AS RQR.

** ONE (1) EA TO COFS, ACOFS G-3, ASST G-3 & ACOFS G-2.

*** ONE (1) AN/GRR-5 AT EA SIGCEN OP BY THE SIG BN PLUS AT DIV REAR COMMCEN.

**** RDO NETTING IS APPL TO ADA CHAPARRAL/VULCAN BN; IF ADA M42 BN IS SUB, RATT NET-1 WILL NOT HAVE A STA AT ADA BN HQ UNLESS PROV BY DIV SIG BN.

Figure 17-6. Type division radio nets, airborne division.

CP's. Allocated circuits will be extended by corps signal personnel to the appropriate division wire head to provide access into the corps command communication system.

(2) Where feasible, airborne division support command headquarters may be connected into the army area communication system by an army area signal center. Normally, this is done by locating a radio relay terminal in the vicinity of support command headquarters; this army-supplied terminal is then extended by cable to the support command wire head by army signal corps troops.

c. When separately located, the division rear echelon is normally connected into the nearest area signal center by an army area signal unit.

17–17. Airborne Division Radio Nets (fig. 17–6)

a. The airborne division places heavy reliance on tactical radio sets of all types. Single sideband (SSB) radio teletypewriter (RATT), as well as SSB and FM voice radio, are employed extensively for division level nets.

b. Division tactical radio nets are designed to support specific functions and thus are usually restricted to specific categories of traffic. For example, the function of operations is usually combined with intelligence, logistics is combined with administration, to yield consequent savings in radio resources. This is illustrated in figure 17–6; net arrangements must be kept flexible and are varied to meet the specific requirements imposed by the tactical situation and are also limited by the equipments and frequencies available.

17–18. Internal Division Radio Nets (fig. 17–6)

Internal division radio nets of the airborne division are discussed in *a* through *g* below.

a. Division Command Net, AM.

(1) This net provides the division commander with direct communications to all major subordinate commanders. Staff officers may also operate in this net as directed. The traffic passed is command operational in nature.

(2) The signal battalion provides only the NCS at division main and a station at division alternate. These stations are normally remoted into the DTOC's at each location for the use of the commander or his designated representative. The DSO operates a station in this net in his role as signal battalion commander.

(3) Voice security equipment is not available for use on this net.

b. Operations-Intelligence Net, RATT Net No. 1.

(1) A requirement exists to provide a reliable, secure means of passing traffic of an operations-intelligence nature between the division G3/G2 and the S3/S2 elements of the maneuver and combat support units of the division. The operations-intelligence net, RATT Net No. 1, is designed to meet this requirement. The use of a combined net is based on the concept of close working relationship and interchangeability of operations/intelligence functions at all levels.

(2) Units included in this net, with the exception of the engineer battalion and cavalry squadron, are provided direct support RATT teams from the division signal battalion. In addition, the signal battalion provides the NCS at division main and a station at division alternate.

(3) This net is normally employed on a secure circuit basis, utilizing cryptographic equipment organic to each radio station. Since there are ten possible stations in this net, NCS must enforce strict net discipline.

c. Division Administration-Logistics Net, RATT Net No. 2.

(1) This net provides a reliable, secure means of passing administrative and logistics traffic between the division support command and the combat service support elements of all organic and attached and supporting units of the division.

(2) All units in this net, with the exception of the engineer battalion and the cavalry squadron, are provided direct support RATT teams from the division signal battalion.

(3) The center of the combat-service support complex and the principal user of this net is the division support command. For this reason, the NCS, provided by the division signal battalion, is located at support command

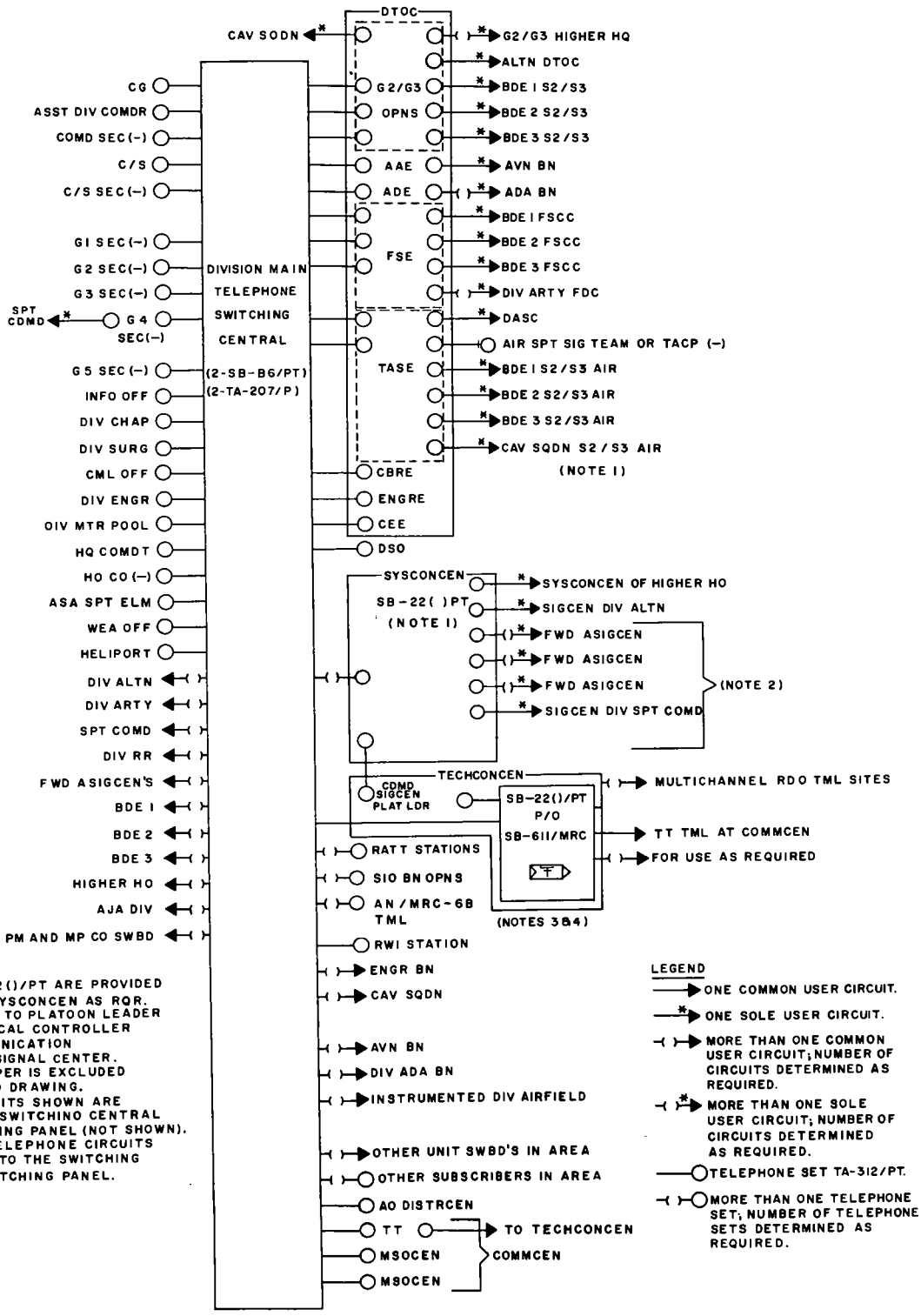


Figure 17–7. Type telephone and circuit distribution diagram for division main signal center, airborne division.

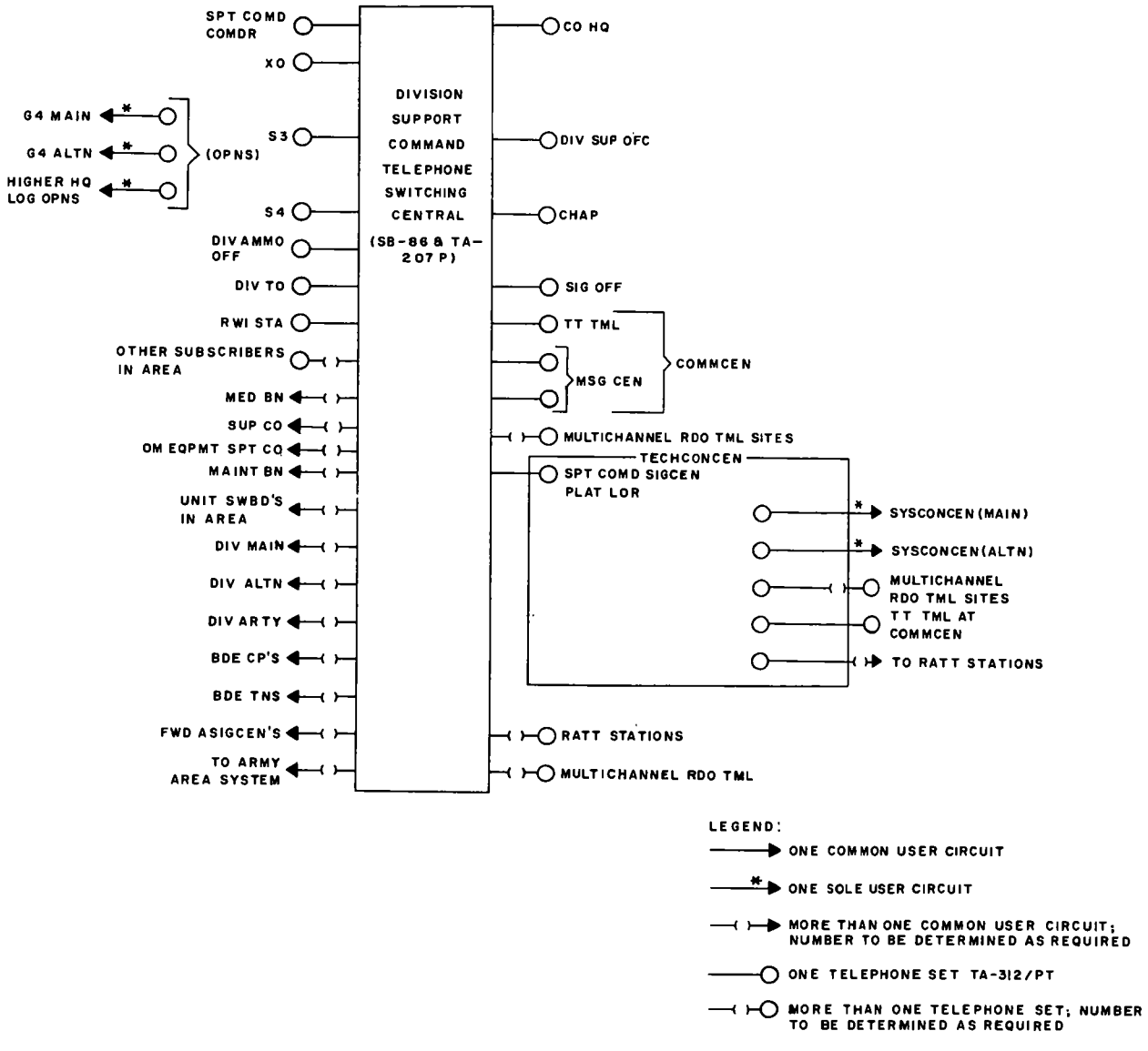


Figure 17–8. Type telephone and circuit distribution diagram for division support command signal center, airborne division.

headquarters. In addition, a station is established by the signal battalion in each forward area—this station serves as the entry point into the net for the brigade headquarters, the maneuver battalions, and other units located in the vicinity.

(4) This net is normally employed on a secure circuit basis, utilizing cryptographic equipment organic to each radio station.

d. Division General Purpose Net, RATT No. 3.

(1) This net provides for overflow traffic from the two RATT nets discussed above. It is available for special purpose use as required.

(2) The signal battalion furnishes all stations in this net, to include the NCS which is normally located at support command. However, NCS may be transferred to another

echelon of division headquarters when required.

(3) The net is usually employed on a secure circuit basis, utilizing cryptographic equipment organic to each radio station.

e. Division Operations-Intelligence Net, FM-Voice.

(1) This FM net is used to pass high priority traffic of an operations-intelligence nature on an immediate basis. The net parallels the division command net SSB-Voice and is intended for the primary use of the personnel at the DTOC and subordinate tactical CP's of the division.

(2) The signal battalion provides only the NCS at division main and a station at division alternate. These stations are normally remoted into the DTOC at each location for use of the G3/G2 operations officers. The S3 of the signal battalion operates a station in this net in his role as operations officer of the battalion.

(3) Operating ranges may necessitate relays or retransmission stations in this net. The DSO is responsible for the provision of ground facilities and for the coordination of aerial relay requirements with the aviation battalion.

f. Division Air Request Net—AM.

(1) Primarily the division air request net, as operated by the air support signal team, is now intended for preplanned air requests; however, precedence must be given to immediate air requests as required. For example, if the station at division main is required by the AF TACP for operation in the AF air request net (AR 525–25), requests for preplanned air

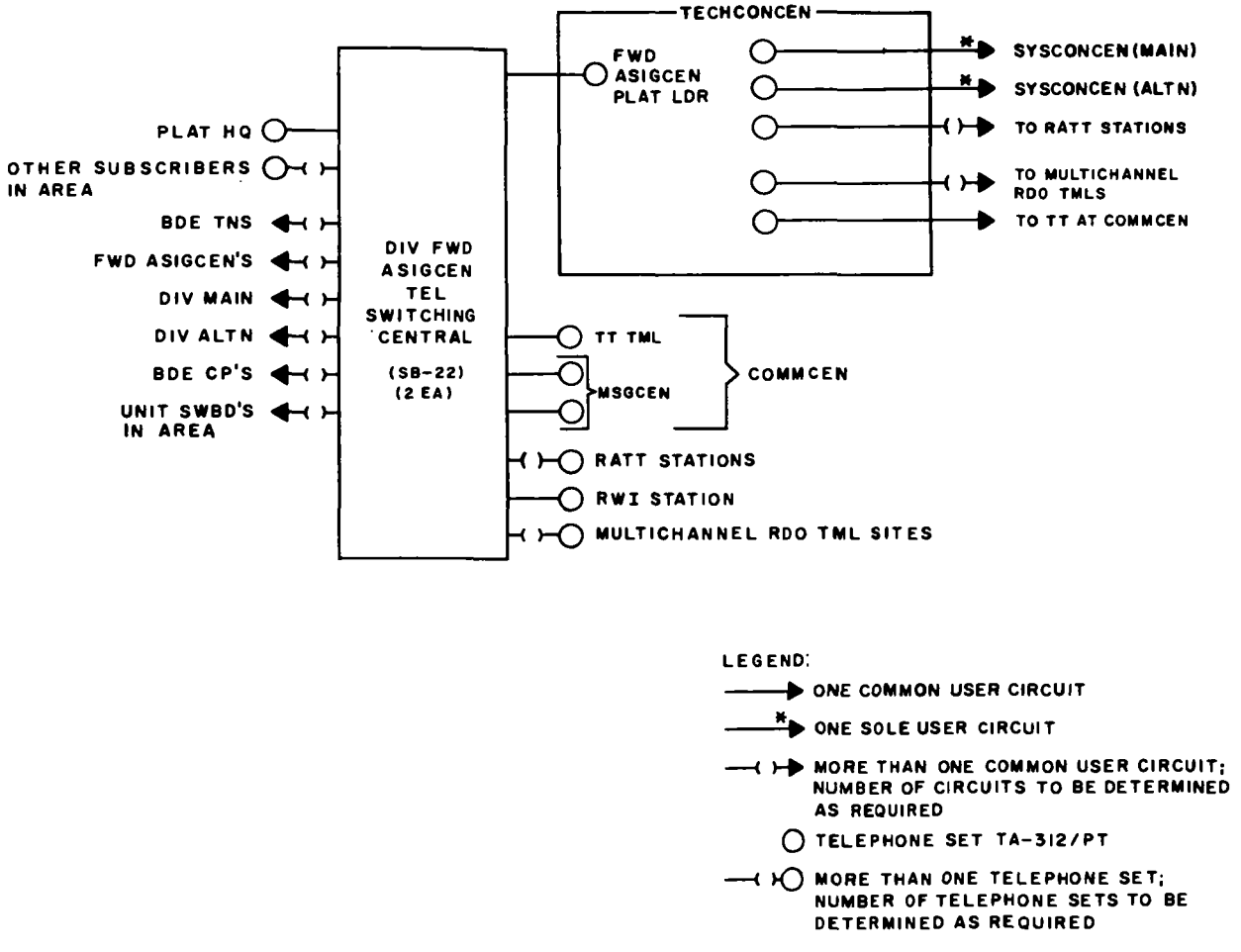


Figure 17–9. Type telephone and circuit distribution diagram for division forward area signal center, airborne division.

support will be passed over other communications facilities to TASE DTOC.

(2) Current radio equipment resources of the division signal battalion (air support signal team) were originally intended to permit operation in the division air request net—AM, and the spot receiver net—UHF. As a minimum, a TACP assigned to division headquarters will require operation in the AF air request net—AM, and the AF Tactical Air Direction Net—UHF. If the TACP assigned requires signal support from the airborne division signal battalion, available equipment will not permit simultaneous operation in the division air request and spot report receiver nets in addition to the Air Force nets. Additional equipment is essential. Note that the AF radio nets are not shown in figure 17–6; refer also to paragraph 17–19.

g. Division Warning Broadcast Net, AM. This net is used to broadcast air alerts; enemy and friendly chemical, biological, and radiological (CBR) attack warnings; effective wind messages; fallout predictions; downwind CBR contamination predictions; and similar information of an urgent operational nature. The division signal battalion operates transceiver stations at division main NCS and division alternate headquarters respectively. Organic units of the division listen to this net by main-

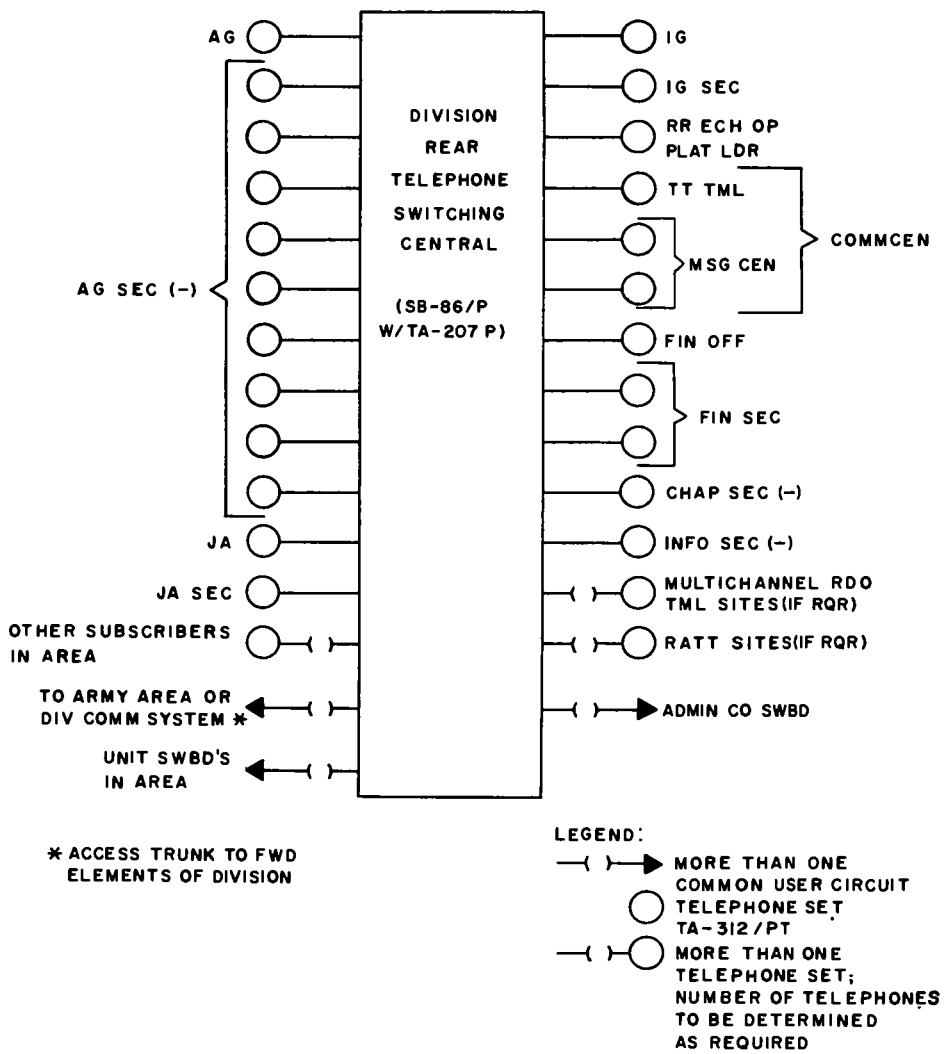


Figure 17–10. Type telephone and circuit distribution diagram for division rear communications center, airborne division.

taining monitoring receivers to pick up the information broadcast from division headquarters. Certain frontline units not normally transmitting in this net may do so under certain specific urgent conditions. This would necessitate diversion of an AM transmitter from another net for a temporary period.

17–19. External Radio Nets

External radio nets are those nets over which a higher headquarters exercises control. The number and type of external radio nets to be provided to the airborne division are extremely flexible and are governed by the type of operation being conducted.

a. Normally, radio sets operating in higher headquarters nets are provided by the higher headquarters. Personnel and equipment to fulfill this requirement are not organic to the airborne division signal battalion with the exception of monitoring radio equipment in the spot report receiver net. In an airborne operation, it is incumbent upon the DSO to insure that responsibilities in this regard are clearly and adequately spelled out in the joint operations order, and that augmentation of personnel and equipment is provided where required.

b. During standard ground operations, communications to higher headquarters should be equivalent to those provided to any other division. The communication facilities should include the following:

(1) Corps Command Operations Net (RATT).

(2) Army Air Request Net (RATT).

(3) Spot Report Net (UHF). (Equipment is organic to the airborne division to monitor this net.)

(4) AF Air Request NET—AM.

(5) AF Tactical Air Direction Net—UHF.

17–20. Airborne DASC

a. The material contained in chapter 4 covering tactical air control generally applies to operations in the airborne division; however, the direct air support center (DASC) may be in an airborne command post (ACP) during airborne operations until a ground DASC is established.

b. This airborne ACP or airborne DASC, is an especially equipped Air Force transport aircraft designed for use during airborne tactical operations. The airborne DASC serves as the NCS radio center for all direct air requests from the various division TACP's. Use of the airborne DASC is contingent upon a favorable air situation.

17–21. Wire Trunks

In an airborne operation installation of wire or cable for trunking circuits will be minimal; normally trunking circuits installed by the airborne division signal battalion will be over multichannel radio links. If the airborne division is engaged in a protracted defense or other long-term ground operation, wire and cable for trunking circuits must be considered. However, in such situations, the airborne division signal battalion will require wire construction assistance to augment its limited capability.

17–22. Telephone and Circuit Distribution

Type telephone and circuit distribution diagrams, representative of facilities installed by the airborne division signal battalion, are shown in figures 17–7 through 17–10.

17–23. FM Radio Wire Integration

a. The division signal battalion operates an RWI station at each signal center. In addition, an RWI station is operated at division artillery headquarters and at the aviation battalion CP. At each location wire lines are extended by signal battalion personnel from the switchboard to the RWI station.

b. Utilization of the RWI network, while simple in its application, requires division-wide standing operating procedures for efficient operation.

17–24. Messenger Service

The airborne division signal battalion provides messenger service from the command echelons of division headquarters to all organic units. Refer to FM 11–57 for detailed discussions on messenger service.

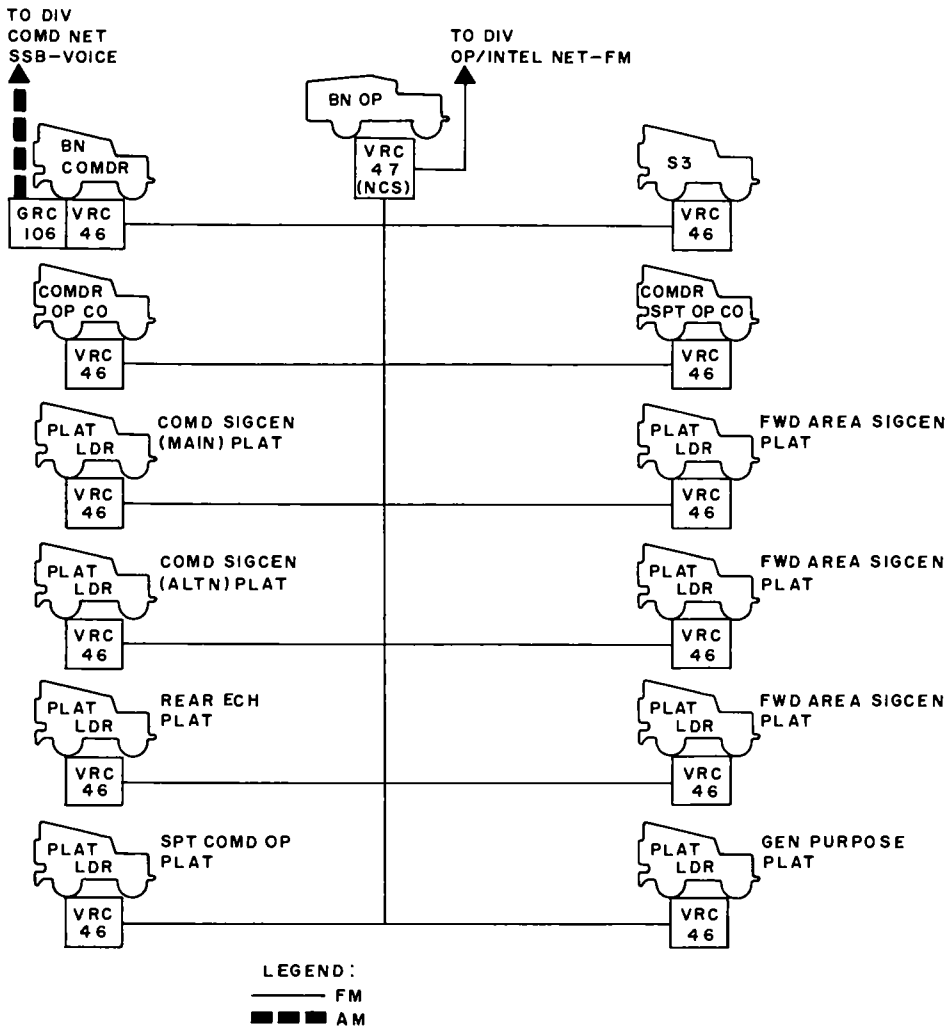


Figure 17–11. Type FM radio net, signal battalion, airborne division.

17–25. Internal Signal Battalion Communications

a. The airborne division signal battalion operates an internal FM radio net for command and control of battalion elements (fig. 17–11). This net is available for use by the division systems control center as required.

b. The airborne division signal battalion normally does not install a separate internal wire system for signal battalion use at any signal center. Internal telephone service for signal battalion use is obtained from the signal center switching facilities available. Refer to FM 11–57 for type interconnection of communication facilities at each signal center.

CHAPTER 18

BRIGADE COMMUNICATIONS, AIRBORNE DIVISION

Section I. GENERAL INFORMATION

18–1. Mission and Organization

a. Mission. The mission of headquarters and headquarters company, airborne division brigade, is to command and control attached combat and combat support elements of the airborne brigade in both training and operations. General information on the airborne brigade is similar to that discussed in chapter 7. Also refer to FM 7–30 and TOE 57–42.

b. Organization. The focal point of the discussion of this chapter is the airborne division brigade headquarters and headquarters company. This company is organized into a brigade headquarters and a headquarters company; the company consists of a staff section, liaison section, communication platoon, and aviation section.

18–2. Airborne Brigade Communications Platoon

The brigade communication platoon provides communication within brigade headquarters and to attached battaliions and other subordinate units. With the exception of its parachute capability, this platoon performs operations similar to those described in chapter 2.

18–3. Brigade Signal Officer and Other Personnel

The airborne brigade signal officer is a member of the brigade special staff. Normally, the platoon leader of brigade communication platoon acts as assistant to the brigade signal officer. Typical duties of both these officers are described in chapter 2. Also included in chapter 2 are type duties of other key personnel of the brigade communications platoon.

18–4. Airborne Brigade Capabilities

a. The airborne brigade possesses capabilities comparable to the infantry and mechanized brigades (refer to FM 7–30). In addition, the airborne brigade has the capability of conducting frequent parachute or airlanded assaults with minimum marshaling and planning procedures; also it can operate with somewhat reduced logistical support.

b. Communication facilities available to brigade headquarters must provide a displacement capability without interruption of command and control. Displacement and installation time must be kept to a minimum.

Section II. BRIGADE RADIO NETS AND WIRE SYSTEMS, AIRBORNE DIVISION

18–5. Brigade Communications to Higher Headquarters

a. Radio. Listed in (1) through (10) below, are external radio nets in which the brigade normally has stations.

(1) *Division operations-intelligence net, RATT (RATT Net No. 1).* The signal battalion operates this station at brigade headquarters.

(2) *Division administrative-logistics net, RATT (RATT Net No. 2).* The signal battalion operates a station in a forward support area (forward area signal center) for the primary use of a forward area support coordinator. Normally, this station acts as an entry point into the net for the brigade trains.

(3) *Division general purpose net, RATT, (RATT Net No. 3).* The division signal battalion operates this station for the brigade. Primary purpose of this net is to provide common-user service for the overflow traffic from division RATT nets No. 1 and No. 2.

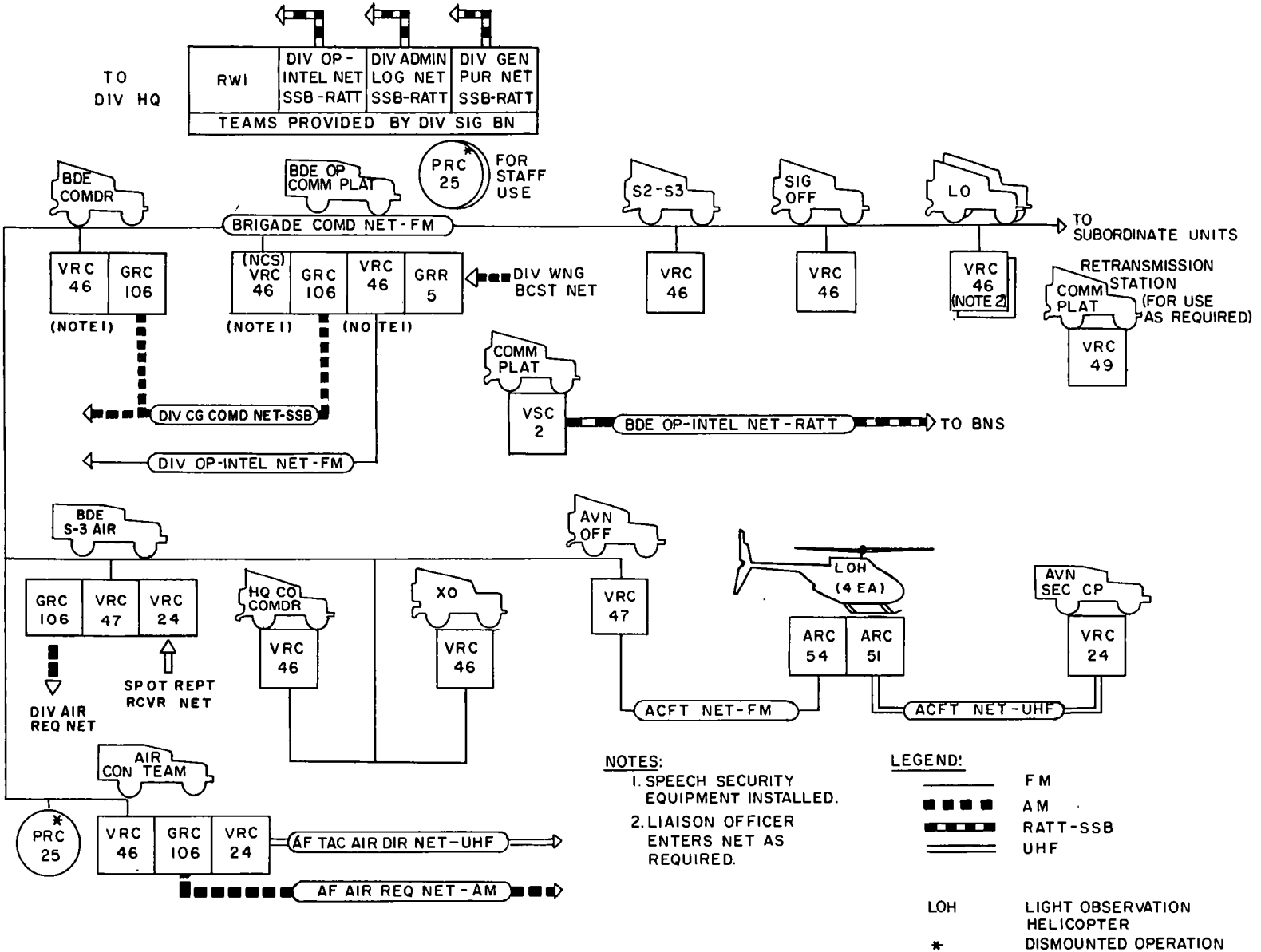


Figure 18–1. Type radio nets, airborne division brigade.

(4) *Division command net, AM.* At brigade headquarters, the brigade commander and the brigade communication platoon operate radio stations in this net.

(5) *Division operations intelligence Net —FM.* At brigade headquarters, the brigade communication platoon maintains a radio station in this FM-voice net for the purpose indicated.

(6) *Division warning broadcast net, AM.* The brigade communication platoon provides the monitoring receiver at brigade headquarters.

(7) *AF air request net, AM.* The air control team of the brigade headquarters and headquarters company operates a station in this net to monitor immediate air support requests initiated by the battalions. The TACP may utilize the equipment on an interim basis. Brigade headquarters may disapprove any request if desired.

(8) *Division air request net, AM.* The brigade station in this net is normally used by the S3 air for preplanned air requests to higher headquarters.

(9) *AF tactical air direction net, UHF.* The brigade station is operated by the air control team for air-to-ground communications to USAF planes flying direct support missions. The TACP may utilize this equipment on an interim basis.

(10) *Spot report receiver net, UHF.* The S3 air maintains a monitoring station in this net.

b. Multichannel Radio. In the airborne division, telephone and teletypewriter communications from division headquarters to both brigade headquarters and the forward support area of the brigade sector are accomplished over multichannel radio links. The multichannel radio terminals required are provided by the signal support operations company, division signal battalion. Wire trunks from division to brigade will be seldom employed in airborne division operations. Usually the forward area signal center and the brigade headquarters CP will be quite closely located in airborne operations and common multichannel radio links suffice for both brigade headquarters and the forward support area of the brigade.

c. Messenger. Messenger service from division to brigade is normally provided by the division signal battalion. If required, messengers organic to the brigade communication platoon may also be used for service to higher headquarters.

d. Visual. Refer to chapter 7.

e. RWI–FM. Brigade headquarters is provided RWI service by a forward area signal center platoon of the signal support operations company, division signal battalion.

18–6. Communications to Subordinate Units

The headquarters and headquarters company of the airborne division brigade provides the communications required to control and coordinate the operations of attached battalions and supporting units.

a. Radio. (fig. 18–1).

(1) *Brigade command net—FM.* This net provides the brigade commander with immediate tactical command and control over subordinate elements of the brigade. Other brigade headquarters stations are as shown in figure 18–1. NCS is furnished by the brigade communications platoon. The principal subordinate stations are at the headquarters of the attached battalions.

(2) *Brigade operations-intelligence net, RATT.* This net provides the capability of transmitting secure traffic between brigade and battalion headquarters. Although traffic is normally concerned with operations and intelligence, it may be used to transmit other high priority information. This net is primarily intended as backup for the FM-voice brigade command net. The NCS at brigade headquarters is provided by the brigade communications platoon.

(3) *Brigade aircraft Net—FM.* Radios organic to the brigade aviation section are shown in an organic aircraft net. In actuality, the four helicopters of the brigade headquarters and headquarters company seldom operate in this net; however, a frequency is required over which aircraft control matters can be handled. In most situations, the aircraft

radios operate in the FM-voice nets of the brigades or attached battalions when transporting commanders or principal staff officers or performing other tasks. Organic FM radio sets of the aircraft are also used for aerial radio relays for the FM-voice nets of the brigade or the attached battalions.

b. Wire.

(1) In the airborne division brigade, the wire system (fig. 18–2) is installed by the brigade communication platoon. When the situation permits, this platoon installs wire links between brigade headquarters and attached battalions and supporting units; the platoon also performs internal wire installation within the brigade headquarters. In addition, units supporting by fire will lay wire to brigade headquarters.

(2) Generally the brigade wire system parallels the FM voice radio nets of the brigade, but also includes elements whose communication needs may not justify a radio set.

(3) Normally one switchboard is installed at brigade CP, one at brigade trains, and a

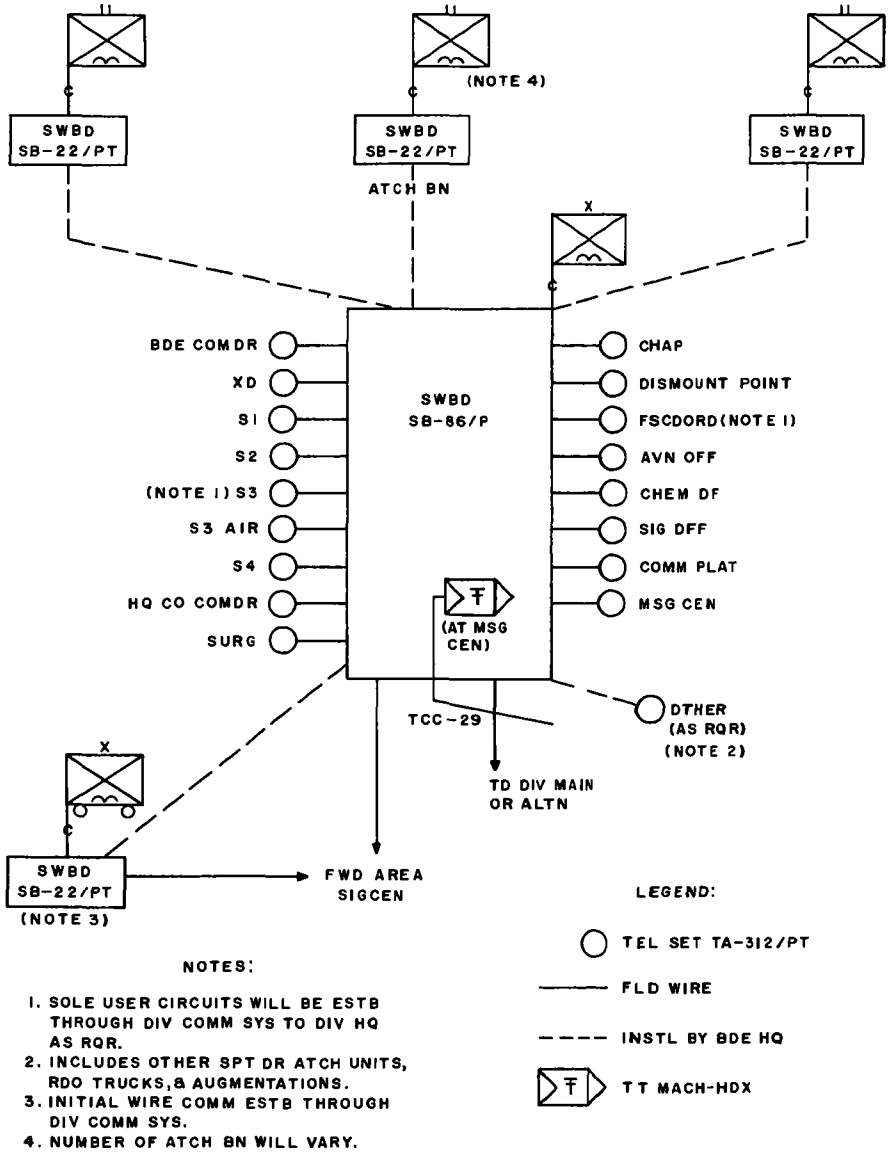


Figure 18–2. Type wire system airborne division brigade.

third switchboard is retained for displacement. Figure 18–2 shows a type switchboard installation with telephone subscribers at a brigade CP.

c. Supplemental Means.

(1) Messengers, both schedules and special, are provided by the airborne division brigade to its attached battalions and other subordinate units.

(2) Visual and sound communications between brigade and subordinate units are maintained in accordance with operations orders, the SOI, and division policy.

CHAPTER 19

AIRBORNE INFANTRY BATTALION COMMUNICATIONS

Section I. BATTALION HEADQUARTERS COMMUNICATIONS

19–1. General

a. Within the airborne infantry battalion, communications are required to control and coordinate fire and maneuver at battalion, company, and platoon level; to direct organic fire support means; and to conduct and coordinate administrative and logistics functions (Refer to TOE 7–35 and FM 7–20.)

b. Communications within battalion headquarters echelons and to organic companies and attached elements of the battalion are provided by the communication platoon of the battalion headquarters and headquarters company.

19–2. Battalion Communications Officer and Other Personnel

a. The battalion communication officer serves on the battalion special staff, exercises operational control over the battalion communication platoon, and is responsible to the battalion commander for the installation, operation, and maintenance of all internal battalion communications.

b. The battalion communication chief serves as the principal enlisted assistant to the battalion communication officer.

c. Refer to chapter 2 for typical duties of key communication personnel.

19–3. Airborne Infantry Battalion Communications to Higher Headquarters

a. Radio. Listed in (1) through (5) below are external radio nets (fig. 19–1) in which the airborne infantry battalion normally maintains stations.

(1) *Brigade command net—FM.* The battalion CP stations provided by battalion headquarters section and the communication platoon include the battalion commander, his S3, and battalion operators.

(2) *Brigade operations-intelligence net, SSB—RATT.* The battalion communication platoon establishes and operates the station at battalion CP.

(3) *Division warning broadcast net, AM.* The monitoring receiver at battalion CP is provided by the battalion communication platoon.

(4) *Division air request net, AM.* The battalion CP station is provided by the air control team of the battalion headquarters company. Normally this net is used by battalion to transmit preplanned air requests. The TACP at battalion may require the support from the air control team in which this station is used on an interim basis to forward immediate requests in the AF Air Request Net. All immediate air requests so sent are subject to brigade and division approval before execution—refer to chapter 4. If the radio station supplied by the air control team is used for immediate air requests, preplanned air requests will be forwarded over other communications means.

(5) *Spot report receiver net, UHF.* The battalion monitoring station is operated by the air control team. On an interim basis, the air control team may divert this station for use by the TACP in AF tactical air direction net.

Figure 19–1. Type radio nets, headquarters and headquarters company, infantry battalion, airborne division.

(Located in back of manual)

b. Wire. Where feasible, the brigade communication platoon will extend field wire trunks down to the switchboards of attached infantry battalions (fig. 19–2).

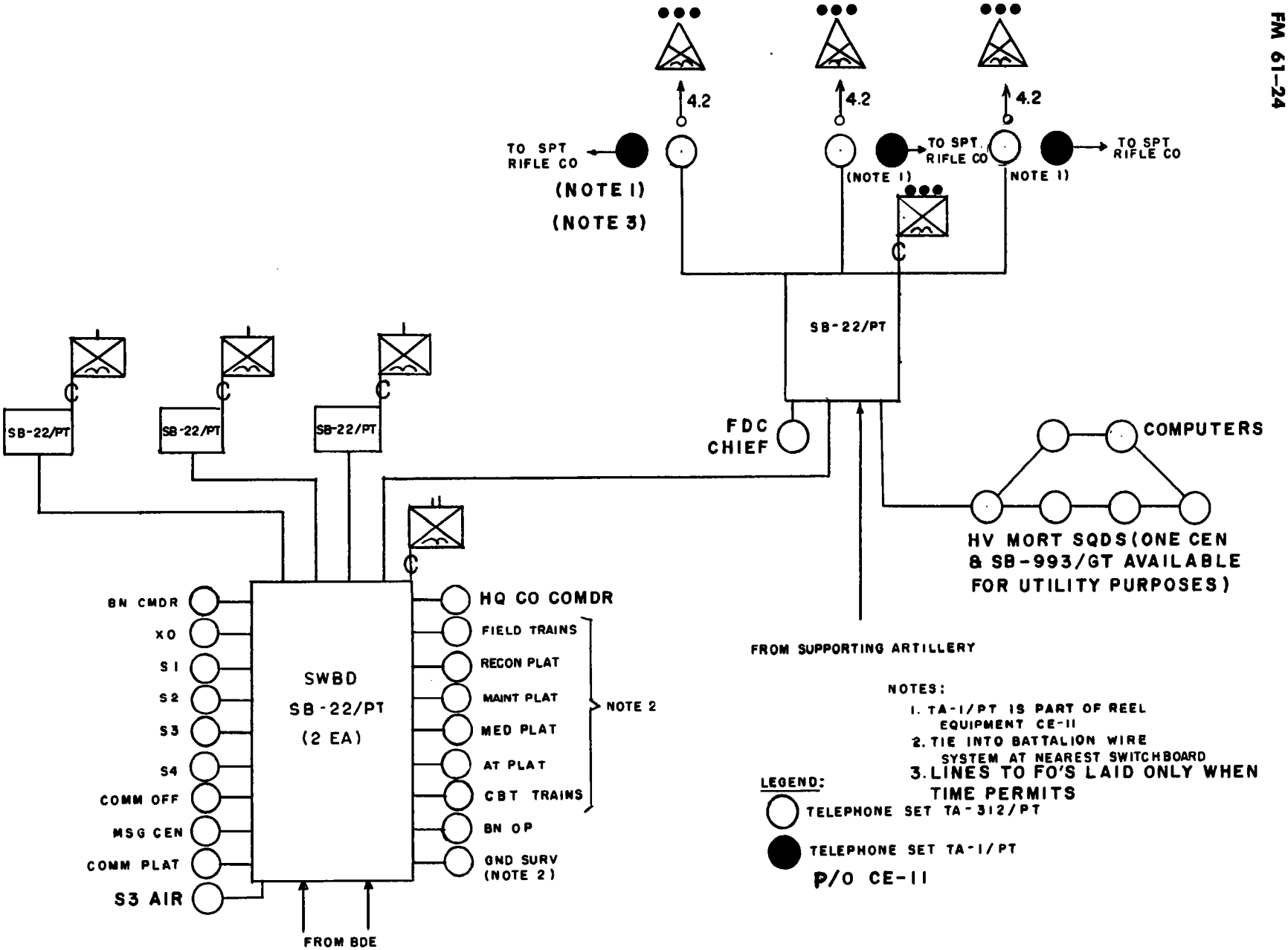


Figure 19–2. Type wire system, infantry battalion, airborne division.

c. Messenger. Messenger service is provided to the airborne infantry battalion by brigade headquarters on both a special and scheduled basis. If necessary, battalion will dispatch messengers to brigade headquarters on a special basis.

19–4. Communications to Subordinate Units, Airborne Infantry Battalion

Communications from airborne infantry battalion headquarters to subordinate battalion units are summarized in *a* through *c* below.

a. Radio (fig. 19–1).

(1) *Battalion command net—FM.* This is a commander-to-commander net from battalion to company level. Battalion staff members also operate in this net, which is also used for operational interstaff coordination and communication to subordinate and attached elements. Support elements such as artillery, engineer, and tactical air representatives may enter this net as required. Battalion headquarters stations normally include the battalion commander and his executive officer and the staff officers and units shown in figure 19–1. Note that the communication platoon provides the NCS station at the battalion CP.

(2) *Battalion administrative-logistics net —FM.* This net is used for the transmission of administrative and logistical messages from the battalion CP to the rifle companies, the battalion support platoon (battalion headquarters and headquarters company), and the combat trains area. The battalion S4 vehicle at battalion headquarters serves at NCS; this net serves as the S4's principal radio link to the field trains. Note that the battalion executive officer also operates a station in this net; refer to figure 19–1 for other battalion stations. In addition, elements of attached and supporting units may also maintain stations in this net for the coordination of administrative and logistical matters.

(3) *Battalion antitank platoon net—FM.* This platoon maintains an internal radio net for command, control, and coordination of the antitank defenses of the battalion. Note that the antitank platoon leader also operates a radio station in the battalion command net, FM.

(4) *Battalion fire direction net—FM.* The battalion mortar platoon maintains an internal fire direction net for control of battalion mortar fire support. The mortar platoon leader must also maintain a radio station in the battalion command net, FM; radio contact is also established with the direct support artillery unit to insure coordination in fire support missions.

(5) *Battalion reconnaissance platoon net —FM.* This net is used to control internal operations of the platoon; NCS is in the platoon leader's vehicle. The platoon leader also maintains a radio station in the battalion command net with a second radio set. Traffic from this platoon is of great operation-intelligence importance.

(6) *Battalion air defense section net— FM.* This radio net is used for internal control of the tactical employment and fire control of the battalion air defense section. NCS is in the section leader's vehicle. The section leader also maintains contact with the battalion commander through the battalion command net; a monitoring receiver is maintained in the division warning broadcast net.

b. Wire. The wire system (fig. 19–2) in the airborne infantry battalion generally parallels the radio nets already discussed. Wire trunks from battalion headquarters are laid to the companies and attached and supporting units when time and the tactical situation permit.

c. Other Means of Communications. Battalion headquarters maintains messenger service to its organic companies and to attached and supporting units. Visual and other methods of signaling are employed in conformance with accepted practices.

Section II. AIRBORNE RIFLE COMPANY COMMUNICATIONS

19–5. Company Communications to Higher Headquarters

a. Radio. The airborne rifle company CP maintains radio sets in the following battalion nets (fig. 19–3):

(1) Battalion command net—FM.

(2) Battalion administrative-logistics net —FM.

b. Wire. Where possible, the battalion communication platoon will extend field wire trunks (fig. 19–2) to each of the company switchboards. Attached and supporting units will be tied into the battalion switchboard on the same basis.

19–6. Company Communications to Platoons

a. Radio (fig. 19–3).

(1) *Company command net—FM.* This net is primarily established for tactical communications from the company commander to platoon leaders; also included are all attached and supporting units. This net may also be used for internal administrative-logistics traffic on a secondary priority basis. Company stations normally include the company commander, his executive officer, a CP station (usually NCS), all platoons, antitank squads, and miscellaneous other stations as required.

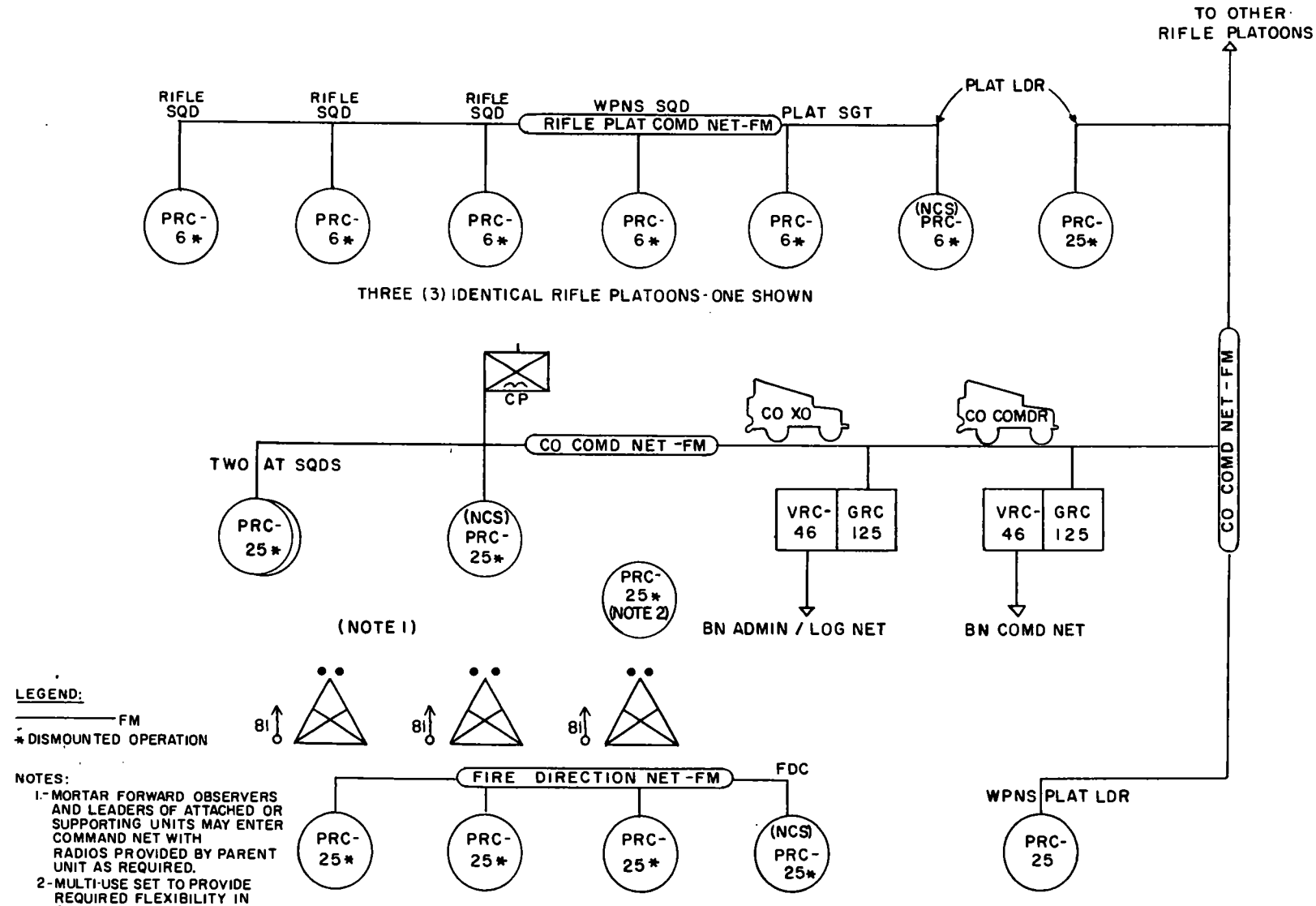
(2) *Platoon command net—FM.* The three rifle platoons and the weapons platoon each maintain a radio net for command and control of internal operations.

(3) *Company FDC net—FM.* The mortar section of the weapons platoon maintains this radio net for the purpose indicated. NCS is at the FDC.

b. Wire and Other Communication Means (fig. 19–4).

(1) The wire system of an airborne infantry rifle company generally parallels the radio nets already discussed. Where time and the tactical situation permit field wire lines are laid from company to platoon and from platoon to squad. Both battery-operated and sound-powered telephones are employed.

(2) Messengers, visual, and sound signaling are employed within the company in accordance with SOP and operations orders.



NOTES:

1. MORTAR FORWARD OBSERVERS AND LEADERS OF ATTACHED OR SUPPORTING UNITS MAY ENTER COMMAND NET WITH RADIOS PROVIDED BY PARENT UNIT AS REQUIRED.
2. MULTI-USE SET TO PROVIDE REQUIRED FLEXIBILITY IN COMPANY. TYPICAL USES FOLLOW: SECOND RADIO FOR COMPANY COMMANDER; OBSERVATION POSTS; PATROLS; ROADBLOCKS; CHECK POINTS; REPLACEMENT AND COMBAT OUTPOST LINES.

Figure 19–3. Type radio nets, rifle company, infantry battalion, airborne division.

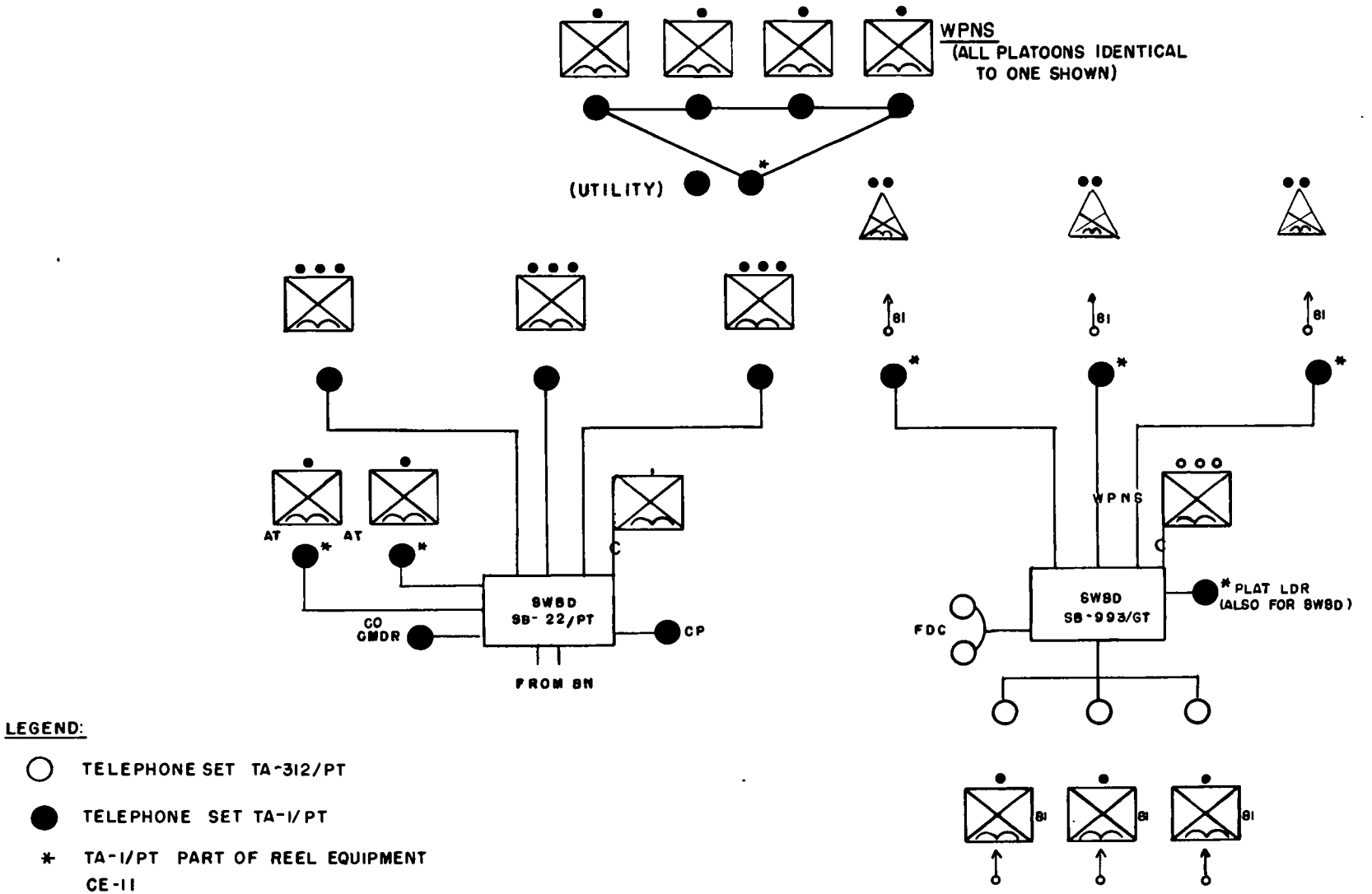


Figure 19–4. Type wire system, rifle company, infantry battalion, airborne division.

CHAPTER 20

COMMUNICATIONS IN ARMORED CAVALRY SQUADRON, AIRBORNE DIVISION

Section I. SQUADRON HEADQUARTERS COMMUNICATIONS

20–1. General

The communication system of the airborne division armored cavalry squadron is similar to the communication system of the armored cavalry squadrons of the armored, infantry, and mechanized divisions discussed in chapter 9. Similarly, radio is the primary means of communication within the squadron. Portable, vehicular, and helicopter FM radio sets provide communications for command, intelligence, administration and logistics. Unlike the armored cavalry squadron of the armored, infantry, and mechanized divisions, the airborne cavalry squadron is not equipped with AM radio sets to operate in an internal squadron command net AM (CW or voice). However, the squadron communication platoon operates two radio retransmission stations which serve to increase the operating range between the squadron command post and troop command posts. The operation and organization of the squadron communication platoon are very similar to those of the combat battalions discussed in chapter 8. Refer to FM 17–36 and TOE 17–75 for further information.

20–2. Squadron Communication Officer and Other Personnel

The squadron communication officer serves on the battalion special staff and performs duties as generally described in chapter 2. Refer also to chapter 2 for description of typical duties performed by key enlisted specialists of the platoon.

20–3. Airborne Cavalry Squadron Communications to Higher Headquarters

a. Radio. Headquarters of the armored cavalry squadron, airborne division, operates stations in the following nets (fig. 20–1):

(1) *Division command net, AM.* At squadron level, the squadron commander and communication platoon operate stations in this net.

(2) *Division operations-intelligence net RATT.* At squadron level, the squadron S3 and communication platoon operate stations in this net.

(3) *Division administrative-logistics net, RATT.* The squadron headquarters station is operated by the communication platoon.

(4) *Division air request net, AM.* The squadron headquarters station is operated by squadron S3 air—the net is primarily used for transmission of preplanned air requests.

(5) *AF air request net—AM.* This net is operated by the air control team for use of the TACP on an interim basis. This net is used for immediate air requests from the squadron—all requests are subject to division approval.

(6) *AF tactical air direction net—UHF.* This station, operated by the air control team, is used by the TACP, if assigned. If not used, the net can be employed for aircraft control by the squadron.

(7) *Division operations-intelligence net—FM.* Squadron headquarters station are normally in the operations and the S3 vehicles.

(8) *Air defense section net—FM.* This net is used for internal control of the AD section. The section leader normally monitors the squadron command net, FM.

b. Wire. In a stabilized situation, squadron headquarters may be linked by field wire into an accessible division signal center and thus obtain entry into the division multichannel network.

c. Messenger. Messenger service from divi-

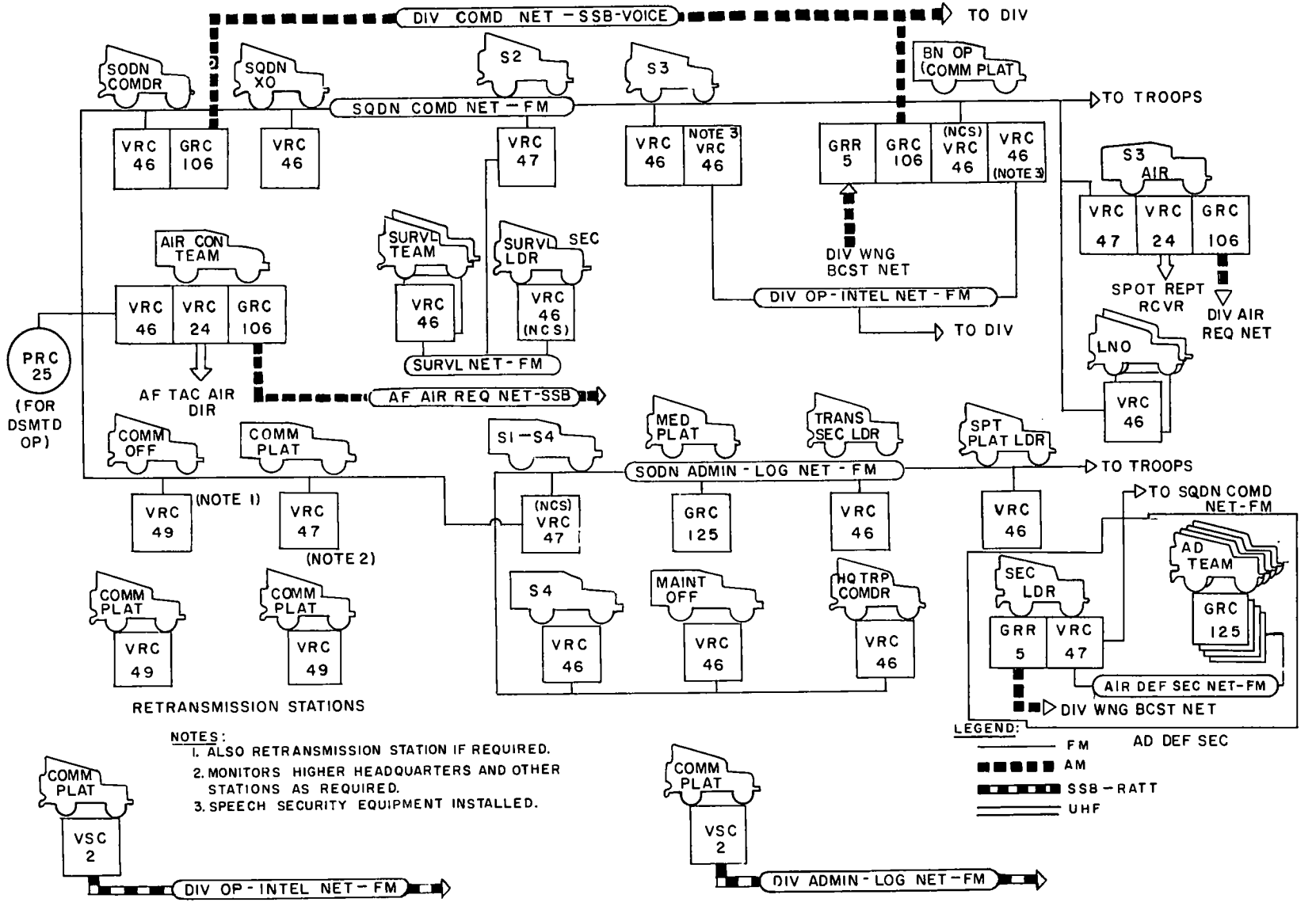


Figure 20–1. Type radio nets, headquarters and headquarters troop, armored cavalry squadron, airborne division.

sion to squadron headquarters is normally provided by the division signal battalion.

20–4. Armored Cavalry Squadron Communications to Subordinate Units, Airborne Division

a. Radio. The squadron operates only FM radio nets (fig. 20–1) for communications with organic, attached, and supporting units. The radio nets employed at squadron level are listed in (1) through (3) below.

(1) Squadron command net, FM.

(2) Squadron administrative-logistics net, FM.

(3) Squadron surveillance net, FM. (In addition to the radio nets listed above the communication platoon provides two radio retransmission stations for use as required—one other use for these sets would be for radio wire integration.)

b. Wire. In the airborne armored cavalry squadron, a wire system to subordinate troops may be established by the communications platoon when the tactical situation permits and time is available to install the circuits. A type squadron wire system is shown in figure 20–4. Internal wire facilities within the squadron CP are provided by the squadron communication platoon.

c. Visual Communications. Visual signals may be employed more extensively in airborne operations than in ground-type operations.

d. Messenger Service. Squadron headquarters habitually provides messenger service to the various troops on both a special and scheduled basis.

Section II. COMMUNICATIONS OF THE ARMORED CAVALRY TROOP, AIRBORNE DIVISION

20–5. General

a. Mission of the armored cavalry troop of an airborne division is similar to like troops in armored, infantry, and mechanized divisions. Basically, each armored cavalry troop is designed to perform reconnaissance, provide security, and engage in offensive, defensive, and delaying action as an economy of force unit. It is employed on missions that complement the squadron mission or the mission of the unit to which it is attached. Because of the mobility inherent in typical operations, FM radio constitutes the primary means of communication for armored cavalry troops of an airborne division. Refer to FM 17–36 for further details.

b. Each armored cavalry troop is authorized a communication chief, radio mechanics, radio operators, and a switchboard operator. These personnel supervise and operate the internal communication facilities within the troop. Refer to chapter 2.

20–6. Airborne Armored Cavalry Troop Communications to Higher Headquarters

a. Radio. Each of the two airborne armored cavalry troops operates radio stations in the following external radio nets (fig. 20–2).

(1) Squadron command net, FM.

(2) Squadron administrative-logistics net, FM.

(3) Division warning broadcast net, AM.

(4) Elements of the troop acting in support or on an attached basis, normally enter the FM radio net of the supported unit or of the unit to which attached.

b. Wire Messenger Service. Normally messenger service and wire lines to higher headquarters are provided by the squadron communication platoon. Where possible, facilities provided through the division communication system will also be utilized.

20–7. Internal Communications of Airborne Armored Cavalry Troop

a. Radio. The airborne armored cavalry troop operates the following FM radio nets (fig. 20–2) for internal communication with troop elements:

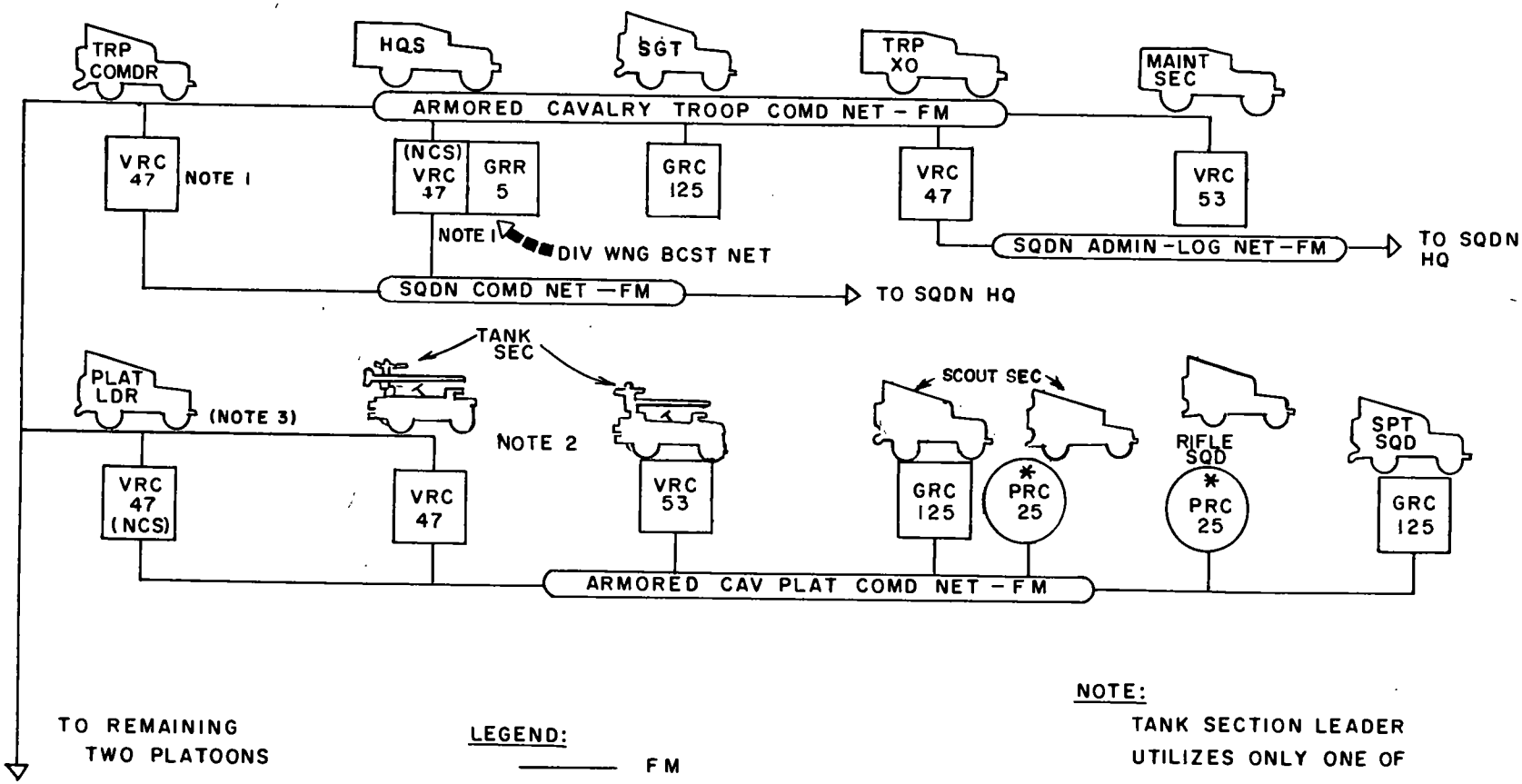
(1) *Troop command net—FM.* This net is used primarily for tactical and secondarily for administrative-logistics purposes.

(2) *Platoon command net—FM.* Each of the three armored cavalry platoons operates an internal radio net for the command and control of platoon operations.

b. Wire. A type internal wire system for an airborne armored cavalry troop is shown in figure 20–4.

c. Messenger. Although no messengers are authorized by the TOE, selected individuals are used as foot or motor messengers as required.

d. Sound and Visual Signaling. Prearranged sound and visual signals are used for local warning and internal control.



NOTES:

1. TROOPS MAY OPERATE IN OTHER NETS AS REQUIRED AFTER OBTAINING APPROVAL TO LEAVE PRIMARY NET.
2. 106-MM RECOILLESS RIFLE SERVES AS INTERIM SUBSTITUTE FOR AIRBORNE RECONNAISSANCE AIR ASSAULT VEHICLE.
3. TWO REMAINING PLATOONS IDENTICAL TO ONE SHOWN.

Figure 20-2. Type radio nets, armored cavalry troop, armored cavalry squadron, airborne division.

Section III. COMMUNICATIONS OF THE AIRBORNE AIR CAVALRY TROOP

20–8. General

a. The air cavalry troop is a combat force with combat elements mounted in combat helicopters. Primarily the mission of the troop is to extend the reconnaissance and security capabilities of the squadron. To accomplish this, the air cavalry troop is used in close conjunction with ground-type armored cavalry units. When required, the air cavalry troop is capable of being used in independent missions. Due to this versatility, the air cavalry troop requires radio sets that will provide air-to-air, ground-to-air, air-to-ground, and ground type only communications. Refer to FM 17–36 for further details.

b. Communications personnel authorized to the air cavalry troop perform duties similar to those described in chapter 2. In addition, helicopter crew personnel are trained in the operation of aircraft-mounted radio sets. Communication specialists of the air cavalry troop are normally authorized in the flight operations section.

20–9. Air Cavalry Troop Communications to Higher Headquarters

a. Radio. The air cavalry troop operates ground stations in the following external radio nets (fig. 20–3):

(1) Squadron command net, FM.

(2) Squadron-administrative logistics net, FM.

(3) Division warning broadcast net, AM.

(4) Flight coordination center (FCC) net, FM.

b. Wire and Messenger Service. Wire trunks are provided by the squadron communication platoon, or telephone service may be obtainable from the multichannel facilities of the division communication system. Messenger service from squadron to troop headquarters is habitually provided by the squadron communication platoon.

20–10. Internal Communications Within the Air Cavalry Troop

a. Radio. FM radio nets (fig. 20–3) are the primary communication means utilized for internal command and coordination of troop operations. Type internal radio nets of the airborne division air cavalry troop are listed in (1) through (3) below.

(1) *Troop command net, FM.* Stations in this net include the troop commander, CP station, flight operation center, platoon leaders, and all platoon aircraft.

(2) *Flight control center net, UHF.* Stations in this net include the aircraft of the troop commander, the flight operations center, and all component aircraft of the various platoons.

(3) *Ground stations, FM.* Portable FM radio sets are furnished on the basis of one per squad for ground-to-air communications in the aero-scout platoon, aero-rifle platoon, and antitank rocket platoon.

b. Wire. Internal wire facilities installed in an air cavalry squadron CP are shown in figure 20–4.

c. Messenger Service. No messengers are specified by TOE. As required, selected individuals may be used as foot, air, or motor messengers.

d. Visual Signaling. In the air cavalry troops, there will be extensive use of visual signals for air traffic control, unit identification, and prearranged message codes.

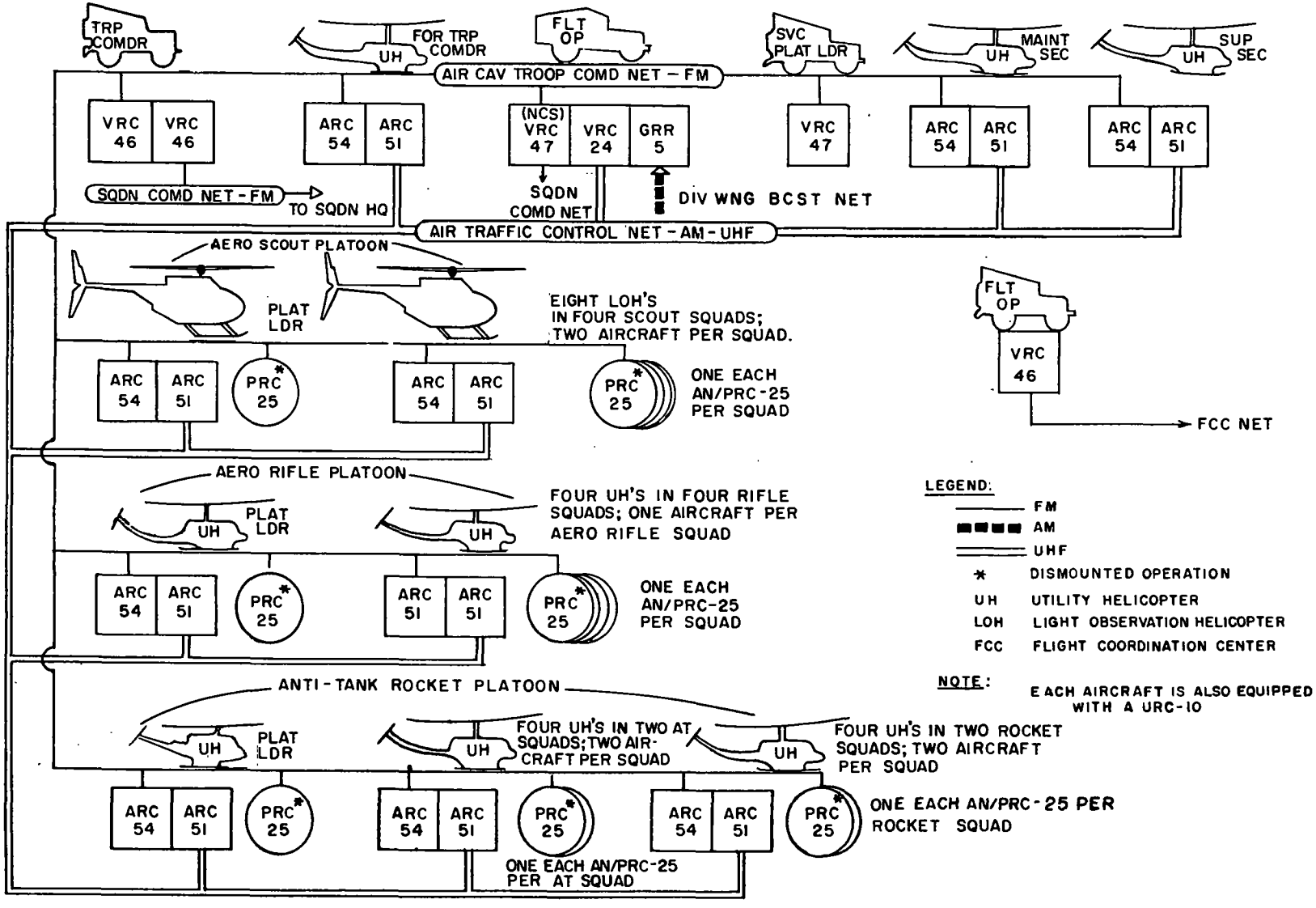


Figure 20–3. Type radio nets, air cavalry troop, armored cavalry squadron, airborne division.

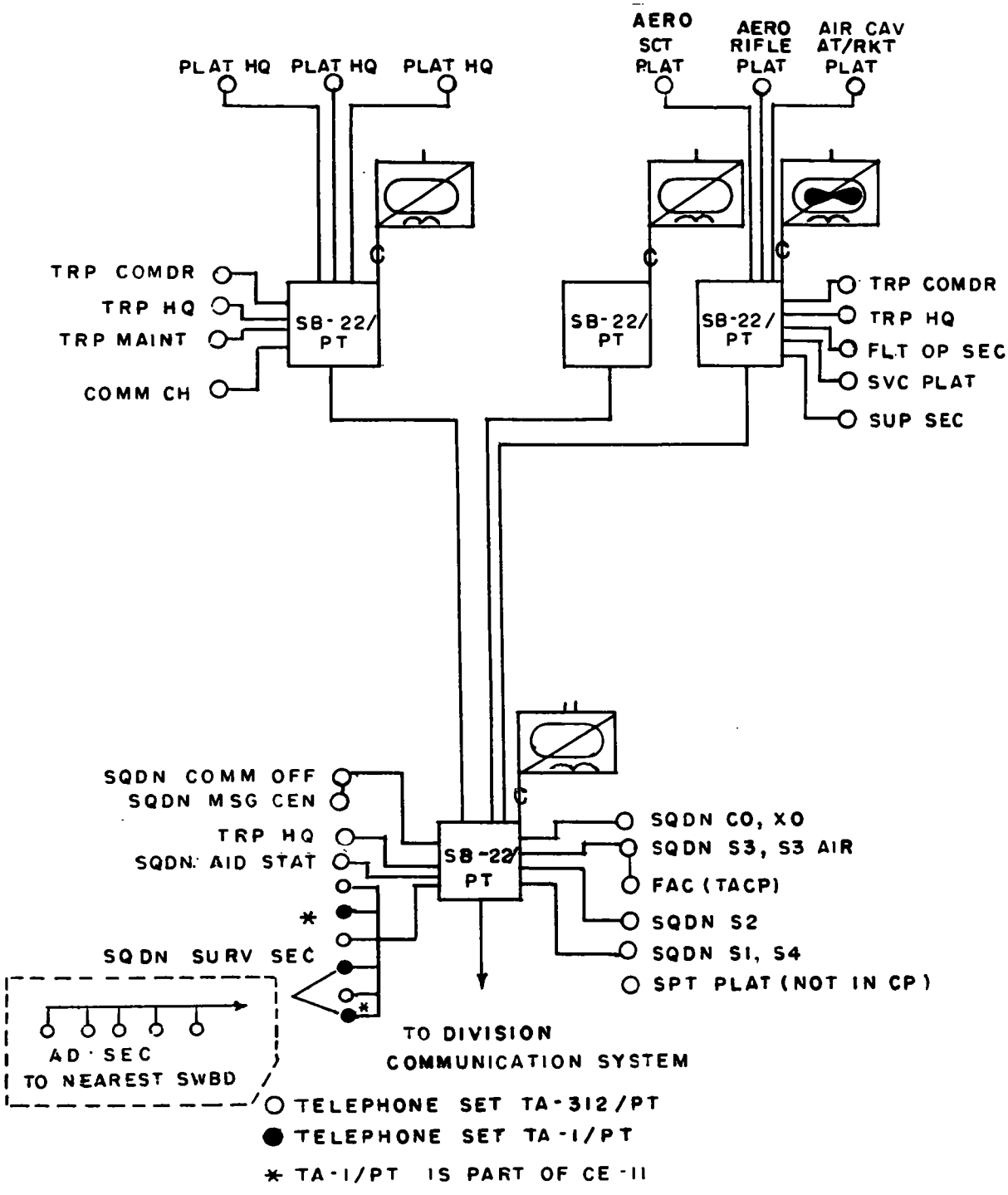


Figure 20–4. Type wire system, armored cavalry squadron, airborne division.

CHAPTER 21

ARTILLERY COMMUNICATIONS, AIRBORNE DIVISION

Section I. GENERAL INFORMATION

21–1. Composition of Division Artillery

Division artillery of the airborne division consists of the following:

a. One headquarters and headquarters battery, airborne division artillery (TOE 6–201).

b. Three field artillery battalions, 105mm, towed, for direct support (DS) (TOE 6–215).

21–2. Organization for Communications

a. Each of the units listed in paragraph 21–1 is authorized a communication platoon.

b. Division artillery headquarters is authorized a signal officer, who serves on the division artillery headquarters special staff as signal advisor to the division artillery commander. The communication platoon of the headquarters battery is commanded by a communication officer who acts as a direct assistant to the signal officer.

c. Each field artillery battalion headquarters is also authorized a communication officer. This officer serves on the battalion special staff and exercises operational control over the battalion communication platoon. The platoon is commanded by the assistant communication officer.

d. Each firing battery is authorized a communication section and a communication chief.

e. For more complete details on airborne division artillery communications, refer to FM 6–10. Typical duties of communication personnel are discussed in chapter 2 of this manual.

Secton II. DIVISION ARTILLERY HEADQUARTERS COMMUNICATIONS, AIRBORNE DIVISION

21–3. General

a. Communications are required within division artillery headquarters to facilitate command and control of organic and attached units of division artillery and to provide these units with the required means for target acquisition, survey, ballistic meteorology, and logistics. These requirements are met by organic voice and teletypewriter radio and wire equipment. All organic means are supplemented by additional facilities provided by division and higher headquarters.

b. Diversification of essential facilities is provided to afford reasonable assurance of requisite fire control in the event of failure or destruction of any particular mode. All means provided must be sufficient to carry the peak traffic loads generated by division artillery's combat mission.

21–4. Radio Communications (fig. 21–1)

The functions of the various radio nets employed by airborne division artillery headquarters are similar to those described in chapters 5, 6 and 17.

a. Radio Nets to Higher Headquarters.

(1) *Division operations-intelligence net, RATT.*

(2) *Division administrative-logistics net, RATT.*

(3) *RWI–FM.*

Note. (All division artillery headquarters stations listed immediately above ((1) through (3)) are provided by the division signal battalion.)

(4) *Division operations-intelligence net—FM.* This station is provided by the radio section of the communication platoon at division artillery FDC.

(5) *Division warning broadcast net—AM.* The monitoring receiver is provided at the FDC by the communication platoon.

(6) *Division command net—AM.* This station is located in the vehicle of the division artillery commander. A second division artillery station is provided by the radio section of the communication platoon.

b. Radio Nets to Subordinate Units. The radio sets in the nets listed in (1) through (3) below, are provided by elements of division artillery headquarters and headquarters battery.

(1) *Division artillery command-fire direction net, RATT.* This net is used to pass secure hard copy FDC information and meteorological data to subordinate units. The NCS is located at the FDC. Other division artillery headquarters stations include the FSE and the meteorological section. All stations listed are provided by the radio section of the communication platoon.

(2) *Division artillery command fire direction net—FM.* This net provides FM-voice radio communications from the division artillery commander to his subordinate commanders and designated members of his staff. The net can also be used to pass FDC data to subordinate units. The NCS is provided by the division artillery communication platoon. Other division artillery headquarters stations are shown in figure 21–1.

(3) *Corps artillery survey net—FM.* The survey section operates an FM-voice radio net. This net operates on a common frequency assigned by corps artillery. The reconnaissance survey officer switches from this net to the division artillery command/fire direction net —FM as required. Refer to figure 21–1.

21–5. Wire System

a. The division artillery wire system is installed by the communication platoon of the headquarters and headquarters battery. For discussion purposes, this system may be divided into a command wire net and fire direction wire net. Over the command wire net the battalion commander is afforded direct voice communications to his staff and subordinate units. The division artillery fire direction wire net supplements the radio fire direction nets previously discussed.

b. Internal wire installation within the division artillery CP is also provided by the division artillery communication platoon (fig. 21–2).

21–6. Multichannel Radio and Carrier

Telephone and teletypewriter service for airborne division artillery headquarters is provided by one dual multichannel radio carrier terminal provided by the division signal battalion at the division artillery CP site. Through this means, division artillery is provided access into the division communication system, and is given a direct link with both division main and division alternate CP's.

21–7. Messenger Service

a. The division signal battalion will provide messenger service to division artillery both on a scheduled and a special basis.

b. Division artillery headquarters and headquarters battery has a limited number of messengers which may be used internally on an as-required basis.

Section III. HEADQUARTERS COMMUNICATIONS, FIELD BATTALION (DS) 105MM, AIRBORNE DIVISION

21–8. General

a. Communications are required within the direct support field artillery battalion, 105mm, to facilitate command and control of the three firing batteries. Constant liaison must be maintained between the artillery and the supported units. These requirements are met by organic voice radio and wire equipment.

b. Duplicate communication means are provided to assure requisite fire control in the event of failure of destruction of any single mode. All means must be sufficient to carry the battalion's peak load under combat conditions.

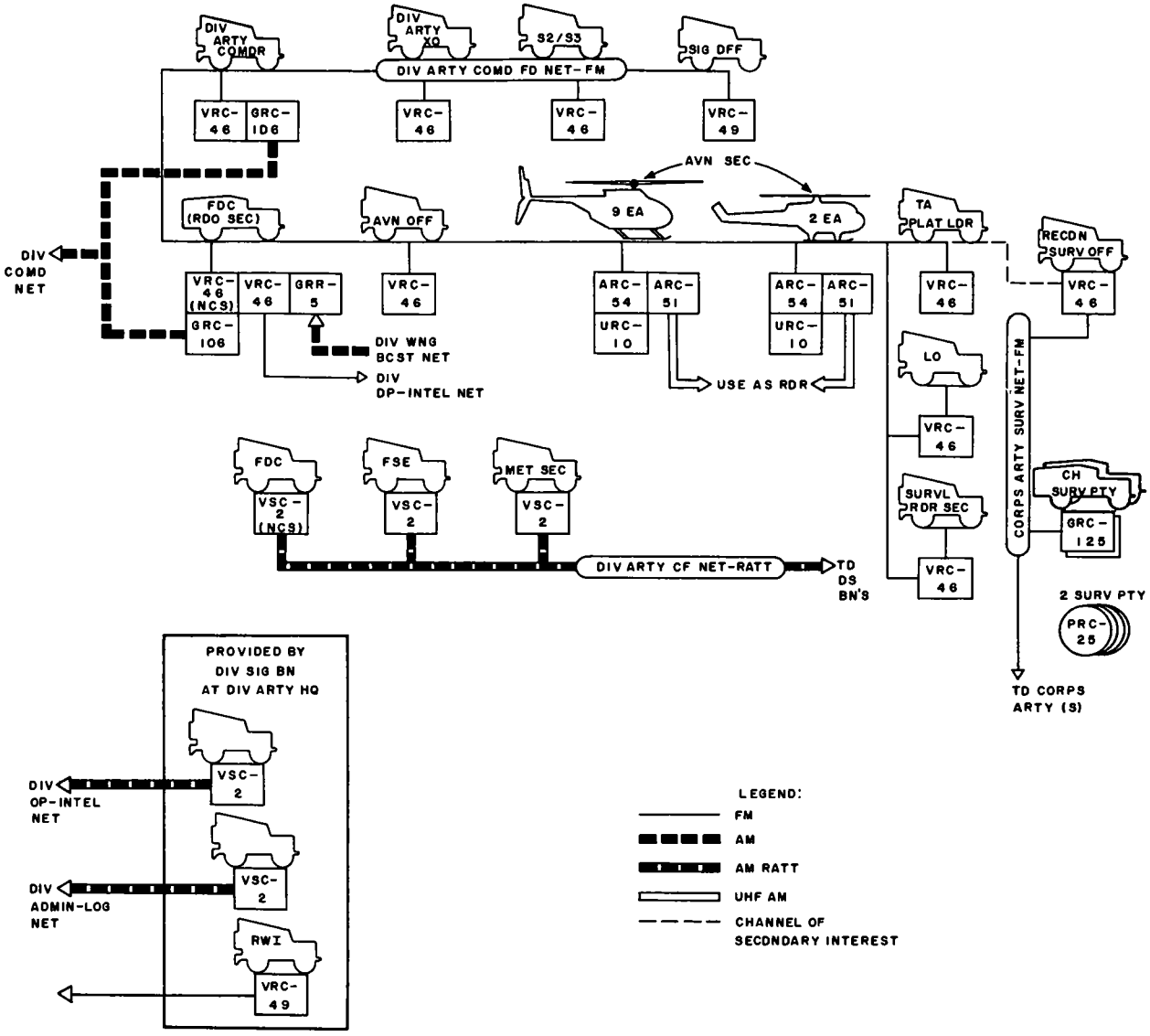


Figure 21–1. Type radio nets, division artillery headquarters, airborne division.

21–9. Battalion Headquarters Radio Communications (fig. 21–3)

a. Radio Nets to Higher Headquarters.

(1) *Divisinn artillery command-fire direction net, RATT.* The battalion headquarters station is provided by the battalion communication platoon. Over this net battalion headquarters receives secure, hard copy FDC information and meteorological data from division artillery headquarters.

(2) *Division artillery command-fire direction net—FM.* This net serves as an FM voice link between the battalion commander and the division artillery commander. The net is also used to receive FDC information from division artillery. In addition to the battalion commander, other battalion headquarters stations are the S3 and CP station for the battalion. This last station is provided by the battalion communication platoon.

(3) *Division warning broadcast net—AM.* The battalion headquarters monitoring receiver is provided by the communications platoon.

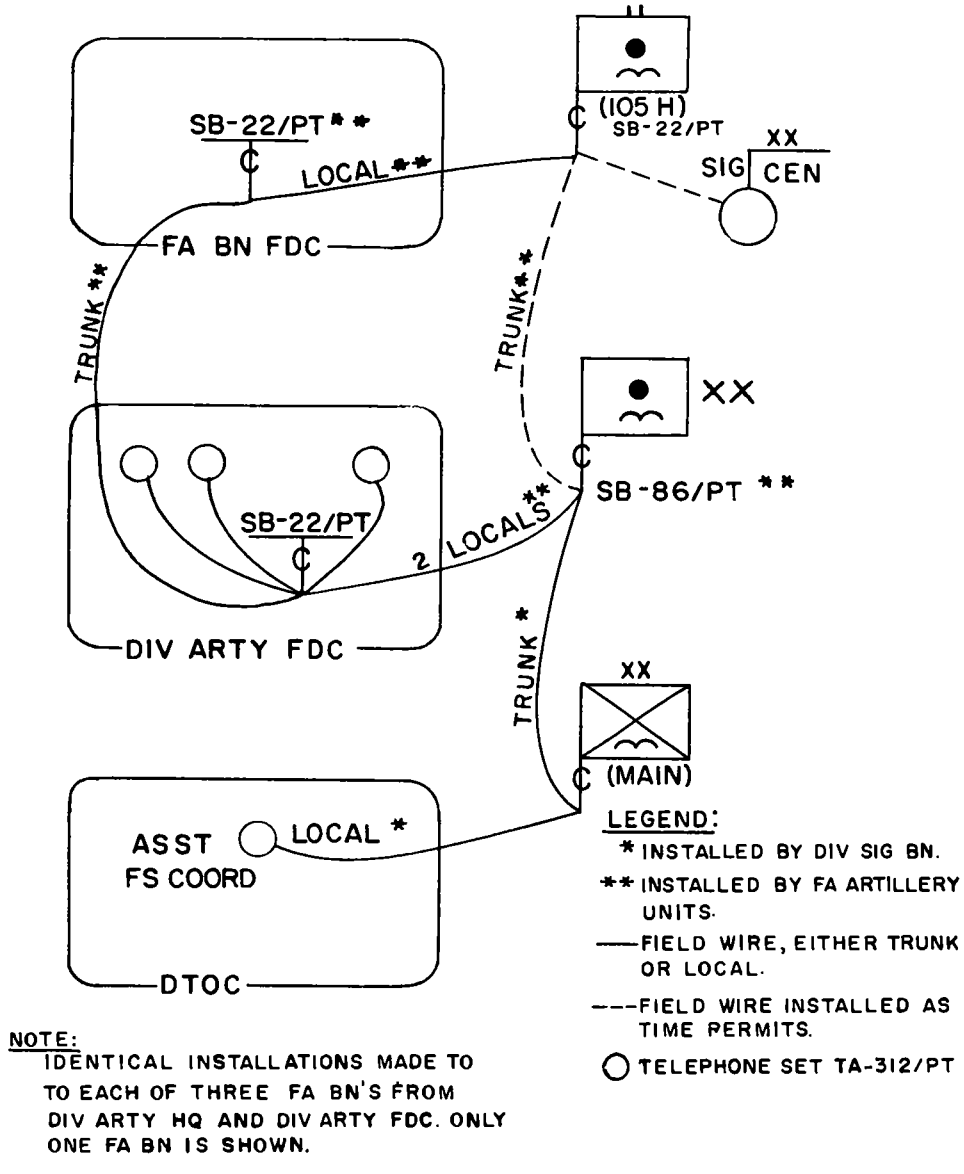


Figure 21-2. Type wire system, headquarters and headquarters battery, airborne division artillery.

Figure 21-3. Type radio nets, field artillery battalion (DS), 105mm, airborne division.

(Located in back of manual)

b. Internal Radio Nets. Within the battalion, radio communications are required to facilitate command and control and to insure that close and continuous direct artillery support is brought to bear on the enemy. Constant liaison communications must also be maintained between the supported units and the artillery battalion headquarters. For radio stations operating at battalion headquarters, refer to figure 21-3. Internal radio nets with stations at battalion headquarters are listed in (1) through (5) below.

(1) *Battalion command-fire direction net —FM.* This net provides voice radio communications from the battalion commander to his staff, subordinate commanders and the supported unit. It also can be used to pass FDC data to subordinate units. Note that the bat-

talion commander is provided with an auxiliary receiver to monitor in the division artillery command/fire direction net.

(2) *Battalion fire direction nets 1, 2, and 3—FM.* These nets provide battalion FDC with point-to-point communications to the respective firing batteries and to the liaison officers and forward observers with the supported units. These nets are designated battalion F1, F2 and F3.

(3) *Supported unit net—FM.* The liaison officers are equipped with auxiliary receivers to monitor in the respective supported unit nets.

(4) *Battalion survey net—FM.* This net may operate as shown in figure 21–3 or it may operate on a command frequency with division artillery survey units.

(5) *AD section net—FM.* This net is used to control the organic air defense teams of the direct support artillery battalion.

21–10. Wire
(fig. 21–4)

a. Field artillery battalion headquarters may derive telephone links to superior headquarters from facilities provided by the nearest area signal center or from direct wire links provided to battalion by division artillery.

b. Internal wire systems installed by the battalion communication platoon supplement the radio nets previously described for command, control, and fire direction. In addition to providing contact with the supported unit, the liaison wire nets (fig. 21–4) serve as an alternate means of communications among liaison officers, forward observers, and the battalion FDC. The communication platoon also makes the required wire installations within the field artillery battalion CP proper.

c. Refer to chapter 10 for more complete information on the internal wire installations required by a 105mm, field artillery battalion.

21–11. Messenger Service
Division artillery headquarters and headquarters battery (communication platoon) is authorized a limited number of messengers for use within division artillery. Similarly, each headquarters and headquarters battery of a field artillery battalion has assigned messengers for internal battalion use.

Section IV. FIRING BATTERY COMMUNICATIONS, 105MM, AIRBORNE DIVISION

21–12. Battery Radio Communications
(fig. 21–3)

The firing batteries do not have separate radio nets for internal communications. Control of battery operations is through battery radio stations operating in the battalion nets previously discussed in paragraph 21–9. Note that each battery maintains a monitoring receiver in the division warning broadcast net.

21–13. Battery Wire System
(fig. 21–4)

Wire trunks from battalion headquarters are extended to each firing battery by the battalion communication platoon. In each firing battery the battery communication section installs the necessary internal wire nets required for internal command, control, and fire direction.

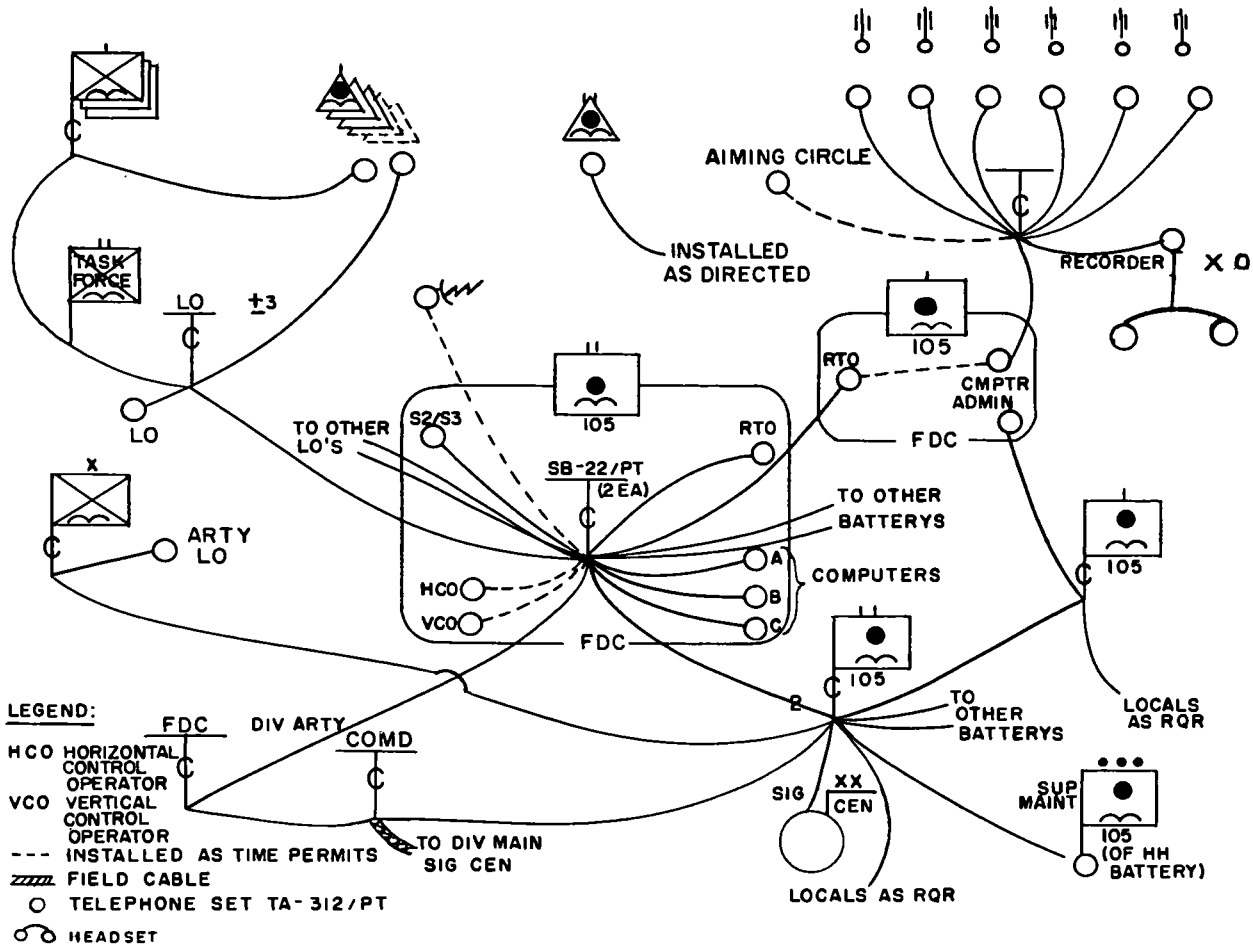


Figure 21-4. Type wire system, field artillery battalion (DS), 105mm airborne division.

CHAPTER 22

ENGINEER BATTALION COMMUNICATIONS, AIRBORNE DIVISION

22–1. General

a. Organization. The airborne division engineer battalion consists of a headquarters and headquarters company and three identical combat engineer companies (TOE 5–25).

b. Mission. The primary mission of the battalion is to increase the combat effectiveness of the airborne division by combat support and general engineer work. The battalion may also undertake and carry out airborne infantry combat missions when required.

c. Battalion Communication Officer and Battalion Communication Section. The communication officer serves on the battalion special staff and exercises operational control over the battalion communication section of battalion headquarters and headquarters company; he is responsible to the battalion commander for the efficient operation of all communication facilities within the battalion. Each battalion communication section contains a communication chief, radio teletypewriter teams, radio mechanics, radio telephone operators, message center personnel, switchboard operators, wire men, and motor messengers. Typical duties of communication personnel are discussed in chapter 2.

d. Communication Personnel at Company Level. Each engineer company is authorized a communication chief, radio mechanic, wireman, and radio telephone operators. Refer to chapter 2 for descriptions of typical duties of communication specialists.

e. Refer to FM 5–136 for more complete information on the operation of the engineer battalion, airborne division.

22–2. Radio Communications

The airborne engineer battalion operates stations in division nets and establishes internal battalion nets as required. Figures 22–1 and 22–2 show the radio net configurations usually found in the airborne engineer battalion.

a. Division Nets. The battalion normally operates stations in the following division nets:

(1) *Division command net, AM.* The battalion communication platoon operates a station for the battalion commander in this SSB voice net. The net is normally restricted to high priority traffic on a commander-to-commander basis.

(2) *Division operation-intelligence net, RATT net No. 1.* The battalion communication section operates a station in this net. The net provides a secure means for passing traffic of an operation-intelligence nature.

(3) *Division administration-logistic net, RATT net No. 2.* The battalion communication section operates a station in this net. The net provides a secure means of passing traffic between the battalion and the division support command.

(4) *Division operations-intelligence net, FM.* The battalion commander, battalion S3, and the communication section operate stations in this net. This net is normally restricted to operational-intelligence traffic of immediate urgency.

(5) *Division warning broadcast net, AM.* A receiving station is established at the battalion CP and at each combat engineer company CP to monitor this voice net.

b. Battalion Nets. The airborne engineer battalion establishes the following internal nets:

(1) *Battalion command net, FM.* This net is the battalion commander's personal means of exercising command-control over his subordinate elements. Traffic is normally restricted to that of a high priority command or operational-intelligence nature. The battalion

communication section has the capability of operating a retransmission station in the net to extend normal operating ranges. Subordinate combat engineer companies enter this net or operate in the command net of a supported unit as required.

(2) *Company command net, FM.* Each combat engineer company establishes its own command net (fig. 22–2). This net is the company commander's personal means of exercising command and control. Subordinate platoons normally enter the net, or they may enter the command net of a supported unit as necessary.

(3) *Platoon nets, FM.* Each combat engineer platoon establishes its own general purpose net (fig. 22–2).

(4) *Assault net.* When possible in air assault, the air movement should provide for the landing of vehicular mounted radio sets with their users; this will expedite the rapid establishment of normal radio nets; however, parachute delivery into the airhead may require that personnel from the combat engineer companies carry man-pack FM voice radio sets. Also in this situation, one individual from battalion headquarters (usually, the communication officer) may be designated to parachute near a radio set, which is suitable to enter the division command net. Once established on the ground, this last station acts as a radio retransmission point for communication between battalion units and division headquarters. The assault radio net may then appear as in figure 22–3.

22–3. Wire Communications

When the situation permits, wire communications should be established among elements of the battalion. Normally distances and deployment will preclude direct, battalion-installed, wire lines from battalion headquarters to subordinate combat engineer companies. The battalion headquarters and each combat engineer company should enter the division wire system at the nearest division signal center, thus utilizing the division common-user telephone system. Figures 22–4 and 22–5 show a typical wire system for the engineer battalion headquarters and a combat engineer company.

22–4. Messenger Service

Engineer battalion headquarters is normally included in division-operated messenger runs. Internal messenger service within engineer units will be as directed by the engineer battalion commander. Elements of the engineer battalion operating in forward division areas will derive messenger support from the nearest available forward area signal center.

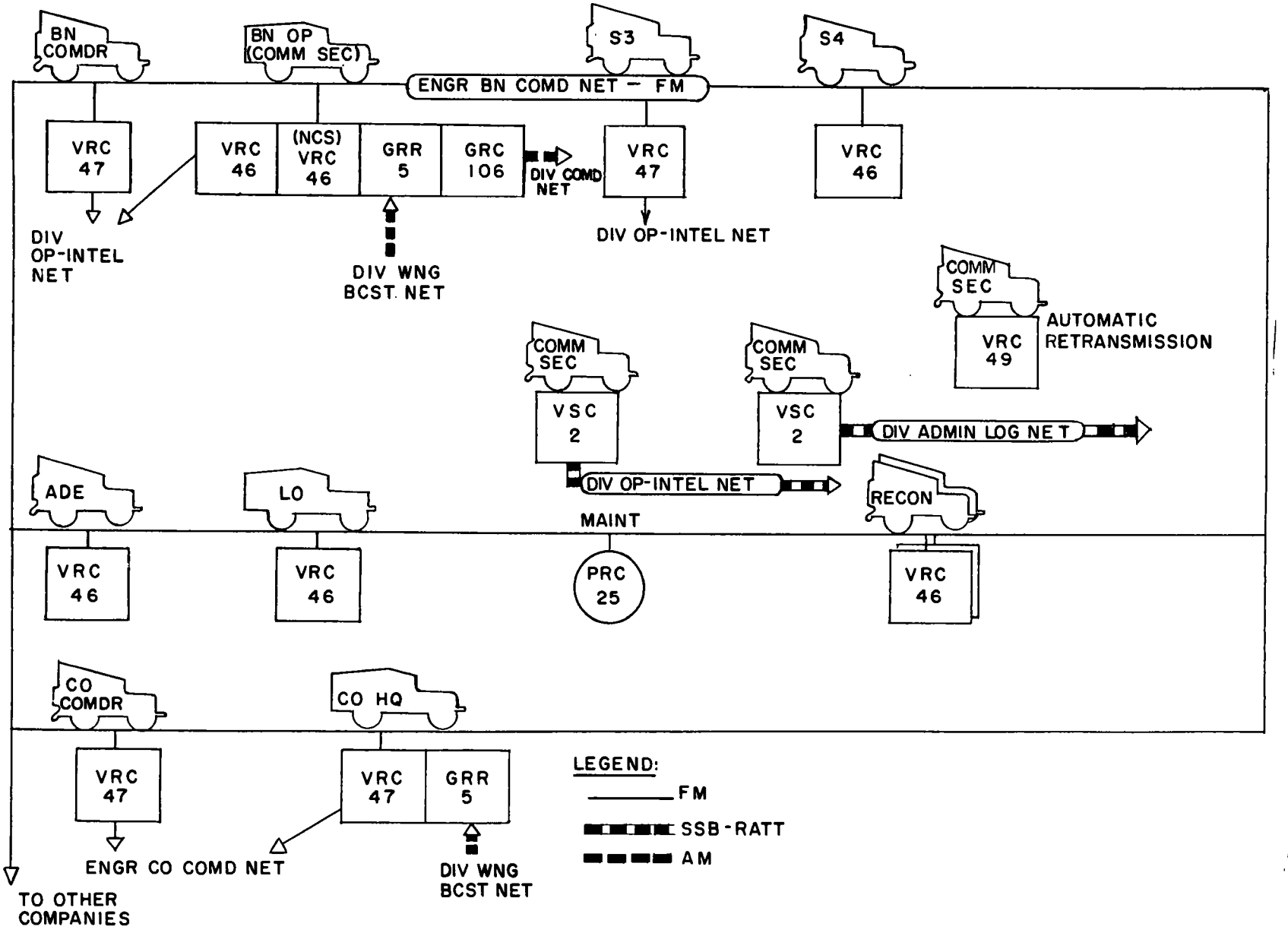


Figure 22–1. Type radio nets, engineer battalion, airborne division.

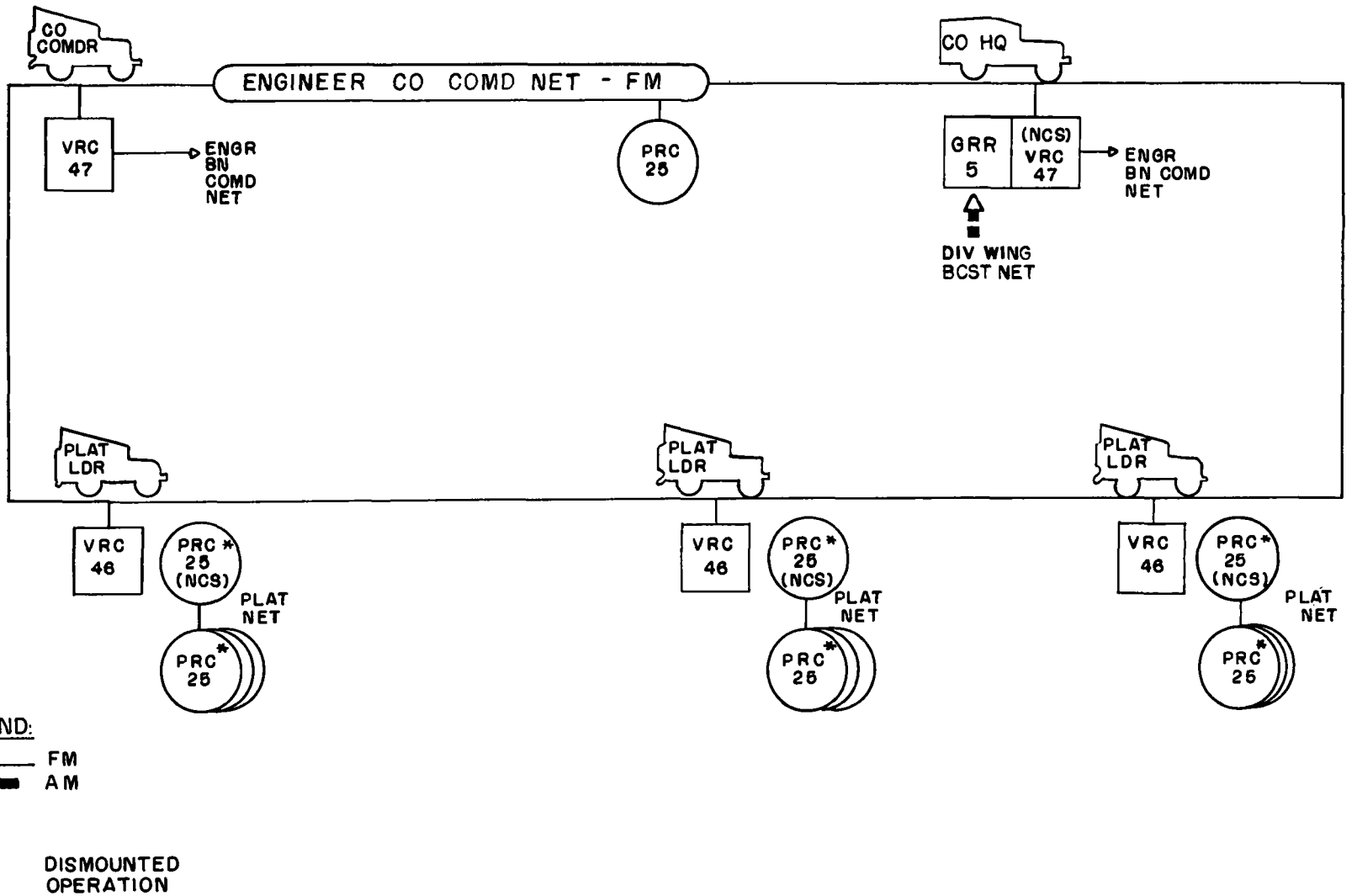


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Figure 22–2. Type radio nets, engineer company, airborne division.

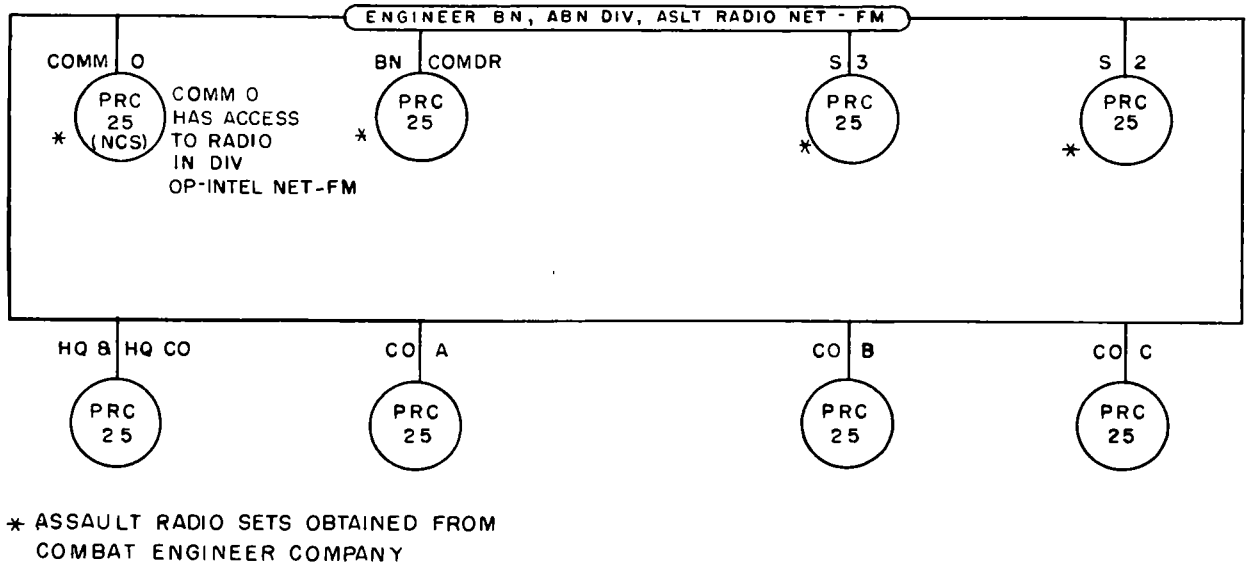


Figure 22–3. Type assault radio net, engineer battalion, airborne division.

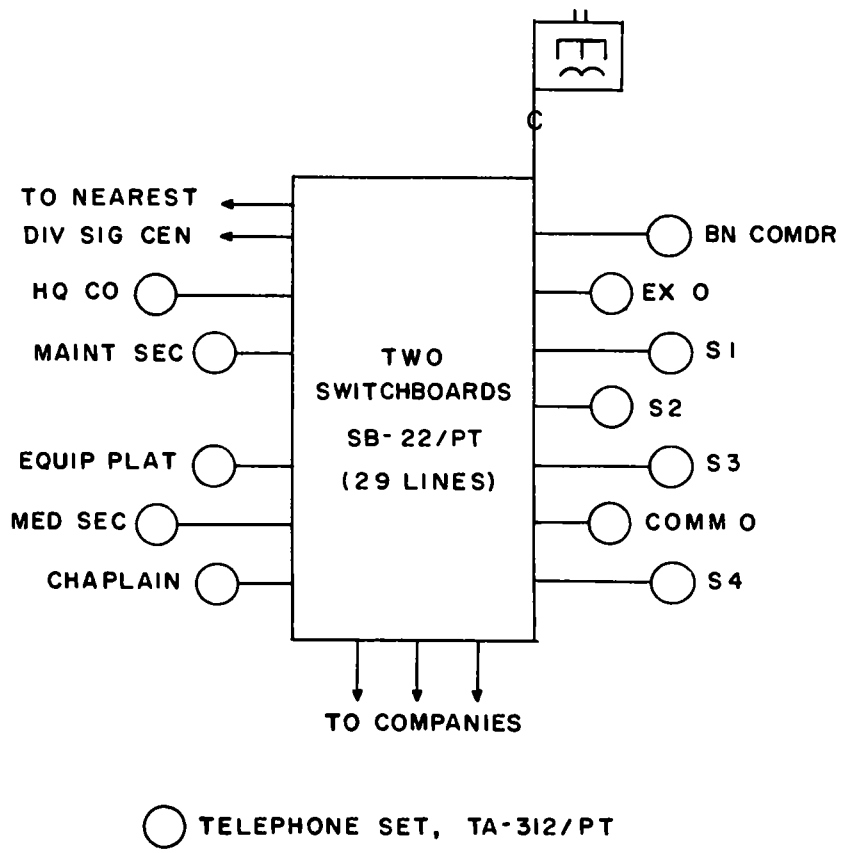


Figure 22–4. Type wire system, engineer battalion, airborne division.

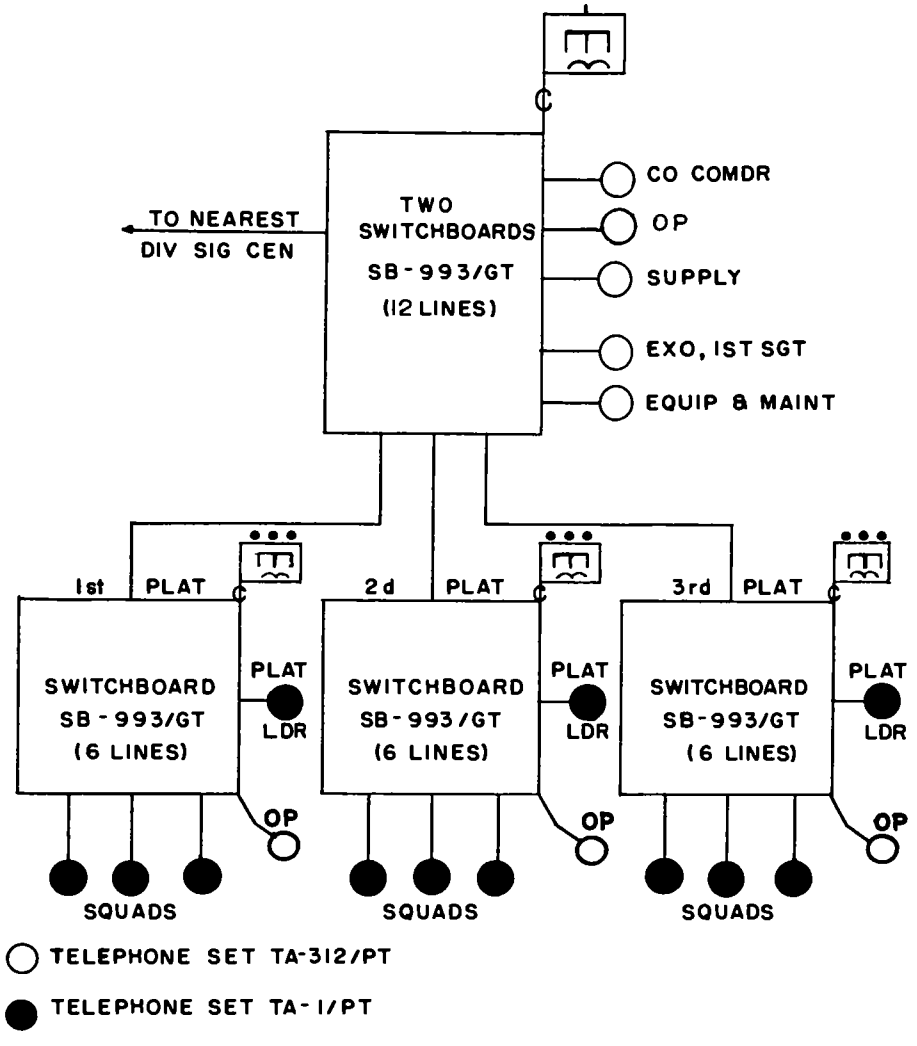


Figure 22–5. Type wire system, engineer company, airborne division.

CHAPTER 23

AVIATION BATTALION COMMUNICATIONS, AIRBORNE DIVISION

23–1. General

a. The aviation battalion of the airborne division (TOE 1–55) is organized into a headquarters and headquarters company, a light airmobile company, and an aviation general support company. The organization and operation of this battalion is essentially the same as the aviation battalion of the infantry division.

b. The organization for communication and typical duties of the battalion signal officer and other key communication personnel are similar to those discussed in chapter 2.

c. Refer to FM 1–15 for more complete details on the aviation battalion of the airborne division.

23–2. Battalion Headquarters Communications

a. General. The battalion headquarters company has organic equipment and assigned communication personnel to operate battalion communication facilities in both internal and external systems. In addition to providing internal and external communications, the battalion communication section assists in the operation of an instrumented airfield with terminal flight facilities, including ground control approach.

b. Radio Nets to Higher Headquarters (fig. 23–1).

(1) *Division operations-intelligence net, RATT.* The aviation battalion station is provided by the division signal battalion.

(2) *Division administrative-logistics net, RATT.* As above, the battalion station is provided by the division signal battalion.

(3) *RWI, FM.* An RWI station is provided by the division signal battalion.

(4) *Division operations-intelligence net, FM.*

(5) *Division command net, AM.*

(6) *Division warning broadcast net, AM.*

Note. Stations listed in (4) through (6) above are provided by the communication section of battalion headquarters and headquarters company.

c. Internal Radio Nets. Internal radio nets operated by the battalion are listed below (fig. 23–1).

(1) *Battalion command-operations net, FM.* Battalion headquarters stations include NCS (communication section) and the battalion commander's vehicle.

(2) *Battalion command-operations net, AM.* NCS is furnished by the communication section at battalion headquarters. This net generally parellels the FM command net but gives a greater operating range.

(3) *Air traffic control net, UHF.* The NCS station, located at the instrumental airfield, is in the vehicle of the flight operations officer, airmobile company (fig. 23–2).

d. Wire System. Aviation battalion headquarters is provided with sufficient wire equipment to control subordinate elements and to afford access into the division communication system through the nearest division signal center. Where relative distances are not excessive, battalion headquarters may lay wire lines directly to subordinate companies. In the aviation battalion of the airborne division, wire nets are habitually installed (or otherwise utilized) to reduce ground-to-ground radio traffic as much as possible.

e. Multichannel Radio. The division signal battalion normally provides and operates a multichannel radio terminal set in direct support of the aviation battalion. This set, usually at the division airfield, furnishes direct multichannel access into the division communication system.

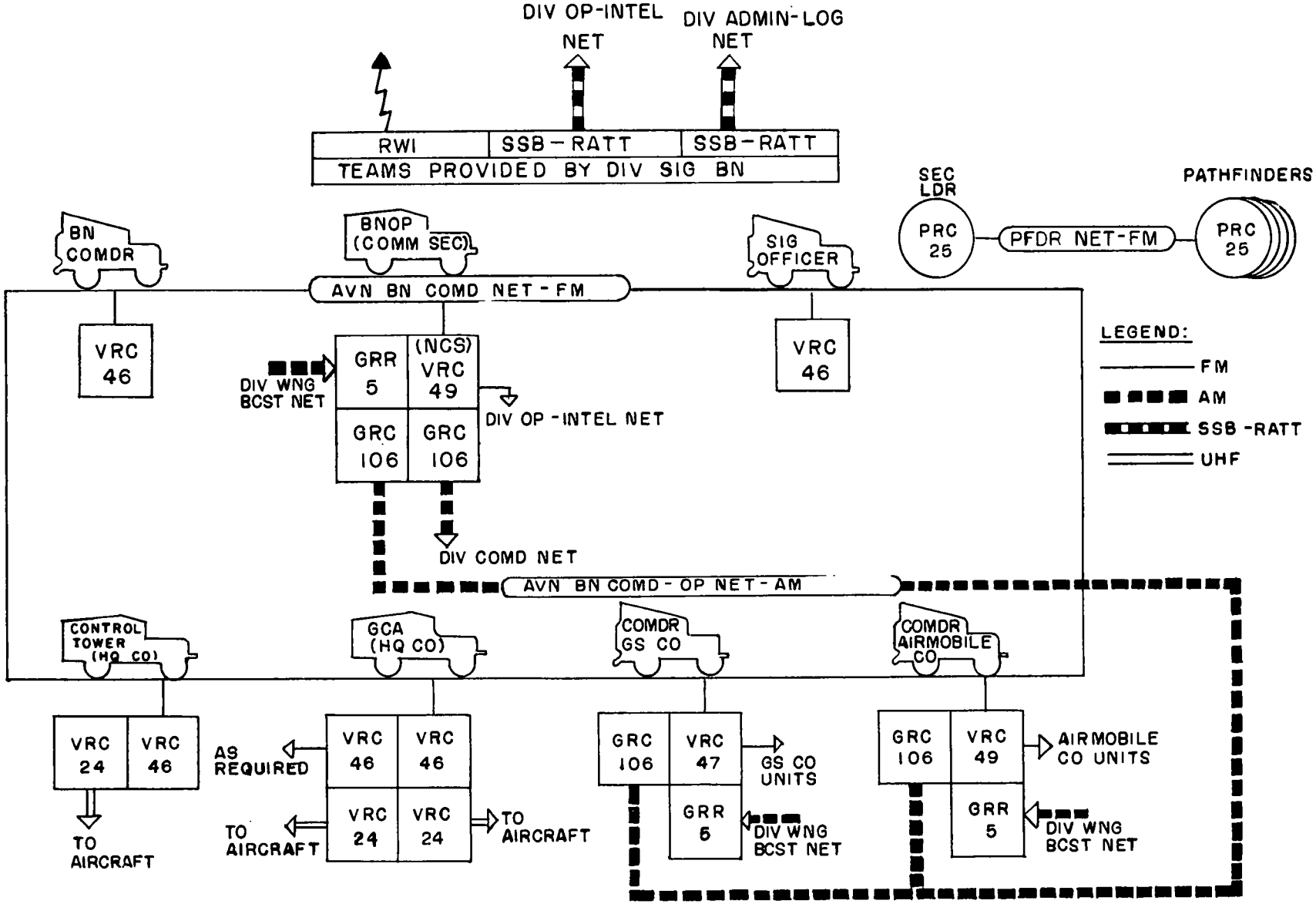


Figure 23–1. Type radio nets, headquarters and headquarters company aviation battalion, airborne division.

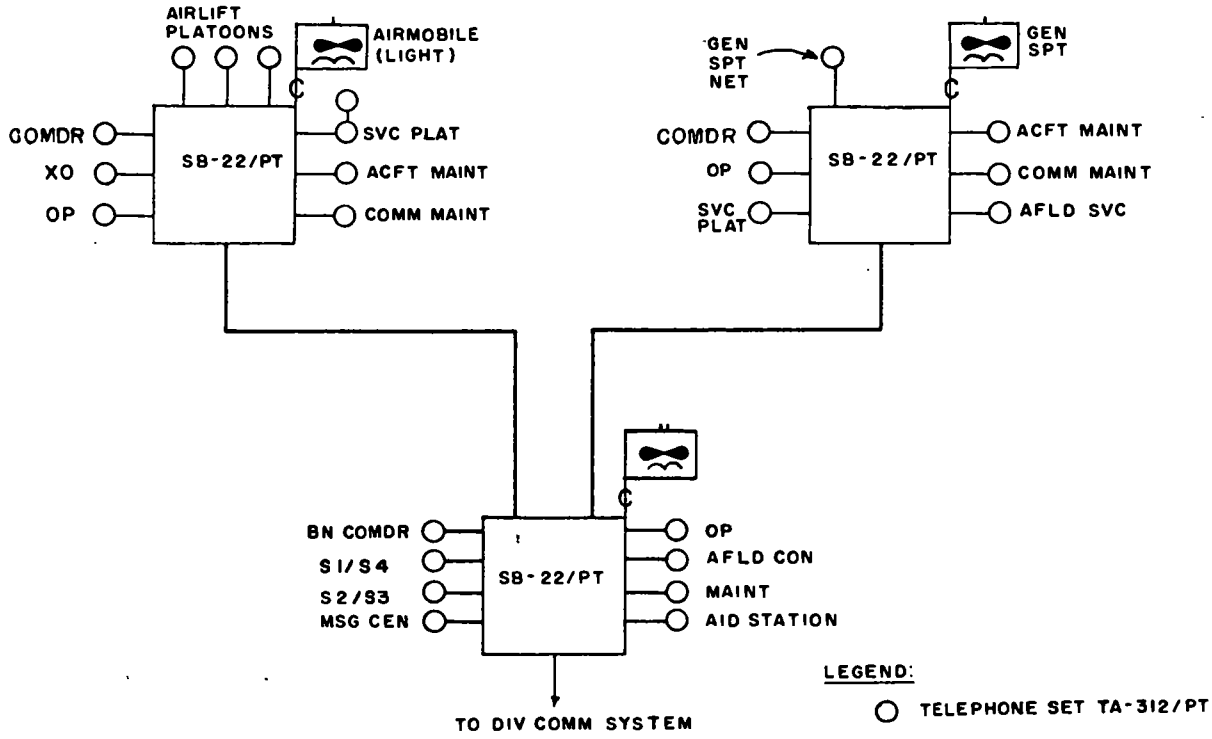


Figure 23–2. Type wire system, aviation battalion, airborne division.

f. Messenger. The aviation battalion is normally included in division operated messenger runs. Messenger service within the battalion is internally provided as required.

23–3. Airmobile Company Communications

The mission and operation of the airmobile company, airborne division, is similar to that of the infantry division airmobile company (ch 12). A summary of communications employed by the company follows:

a. Radio Communications to Higher Headquarters (fig. 23–3).

(1) *Battalion command-operations net, FM.*

(2) *Battalion command-operations net, AM.*

Note. Company station for (1) and (2) above are in the company commander's vehicle.

(3) *Air traffic control net, UHF.* NCS station for the battalion is in the vehicle of the flight operations officer. Other company stations are in organic aircraft.

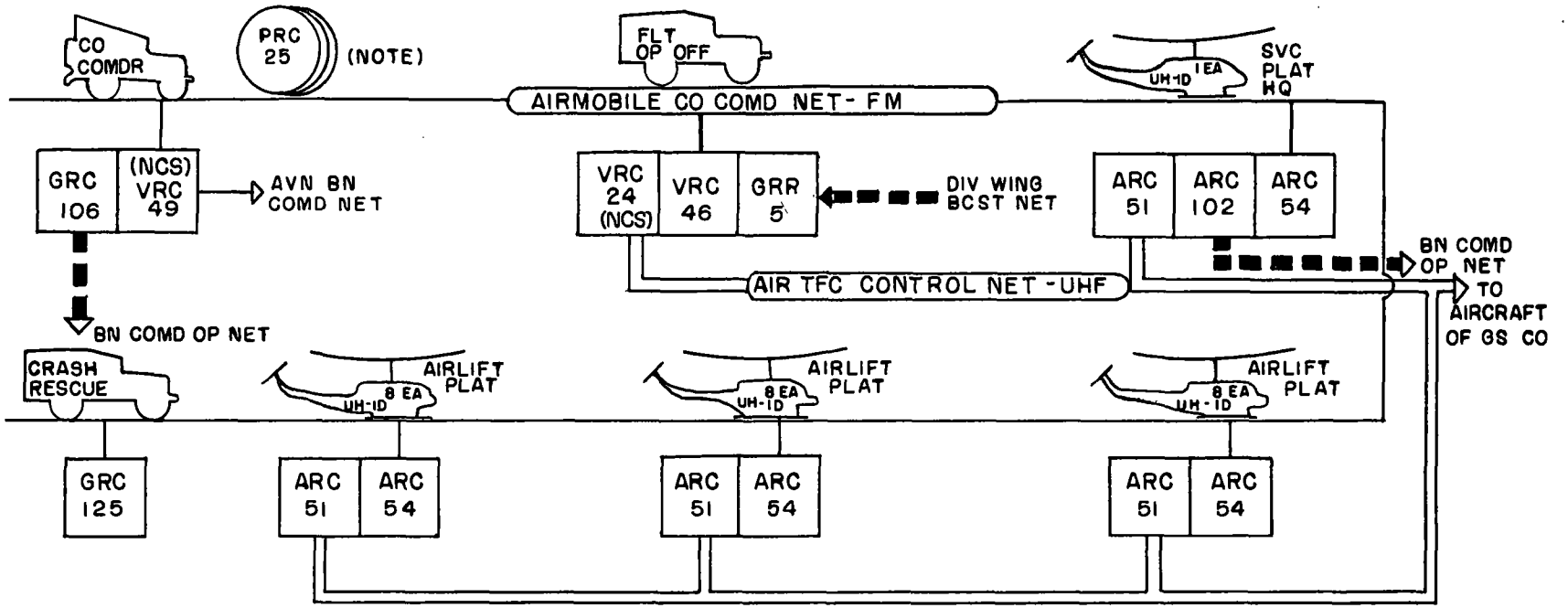
(4) *Division warning broadcast net, AM.* The company station is in the vehicle of the flight operations officer.

b. Internal Radio Communications

(1) *Airmobile company command-operations net, FM.* NCS is in the company commander's vehicle. Other company stations are at flight operations, the airlift platoons, service platoon, airlift stations, and the crash rescue team.

(2) *Other nets.* Component aircraft of the service platoon may communicate with company headquarters over the battalion command-operations net, AM-Voice. In addition, the airmobile company is authorized small portable FM radio sets for use at security posts, the heliport, dismount points, or when aircraft are not operating.

c. Wire. Where possible, battalion will extend field wire facilities to the company switchboard. The company has sufficient wire equipment for internal CP and limited airfield



LEGEND:

FM.

AM

UHF

NOTE:

RADIO SETS FOR GROUND OPERATION AS REQUIRED.

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Figure 23-3. Type radio nets airmobile company, aviation battalion, airborne division.

use. The more extensive wire installations required around the airfield will be provided by the battalion communication section. Assistance may also be provided by the division signal battalion. In addition, the airmobile company also uses common-user telephone facilities which are available through the division communication system. Normally, a multichannel radio terminal set is provided at the division airfield for this purpose.

23–4. Aviation General Support Company Communications

Mission and operation of the general support company, airborne division, are similar to that of the infantry division general support company (ch 12). A summation of the communications employed by the company follows:

a. Radio Communications to Higher Headquarters (fig. 23–4).

(1) *Battalion command-operations net, FM.*

(2) *Battalion command-operations net, AM.*

Note. Company stations for (1) and (2) above are in the company commander's vehicle.

(3) *Air traffic control net, UHF.* Company stations are located in organic aircraft.

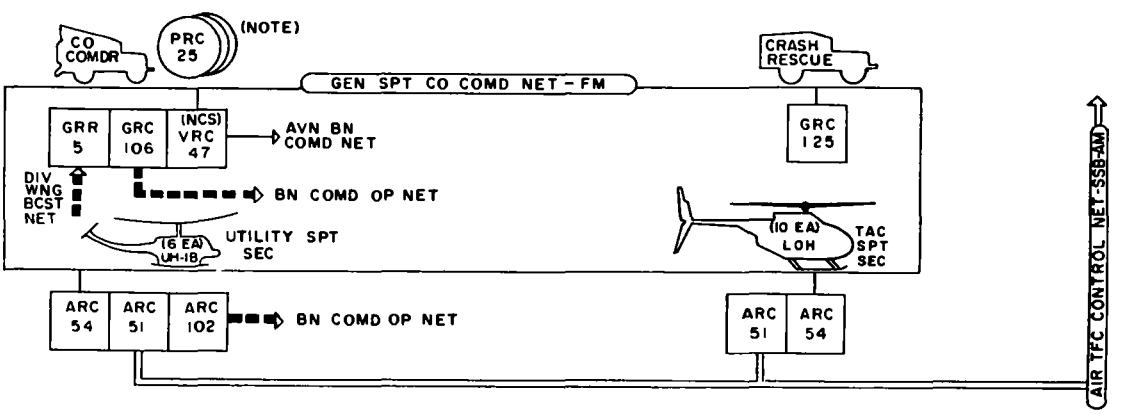
(4) *Division warning broadcast net, AM.* Company station is in the company commander's vehicle.

b. Internal Radio Communications.

(1) *Aviation general support company command net, FM.* The NCS station is in the company commander's vehicle. Other stations are located in the tactical aircraft of the general support platoon and the crash rescue truck.

(2) *Other radio nets.* Utility aircraft of the general support company have radio stations in the battalion command-operations net, AM–SSB-Voice, which may be used for communications to company headquarters. In addition, the general support company has FM-portable radio sets which may be used for security posts, the heliport, dismount points, liaison officers, or when aircraft radio sets are not operating. The crash rescue team has direct FM radio communications with the company CP.

c. Wire. Battalion headquarters may extend field wire trunks to the company switchboard. Internally, the company will make its own CP wire installations. The common-user telephone service of the division communication system will be utilized to the greatest practical extent.



NOTE:
RADIO SETS FOR GROUND OPERATION AS REQUIRED

LEGEND:
——— FM
▪▪▪▪▪ AM
= UHF

Figure 23–4. Type radio nets, general support company, aviation battalion, airborne division.

CHAPTER 24

MILITARY POLICE COMPANY COMMUNICATIONS, AIRBORNE DIVISION

24–1. General

a. The military police company of an airborne division (TOE 19–67) is organized primarily to provide the required military police support. The company is organized functionally and is comprised of the provost marshal section, company headquarters, security platoon, and three MP platoons.

b. Authorized communication personnel include a communication chief, radio mechanic, and radio operators. Normally organic radio sets are operated by personnel of the company or the PM section in addition to their other duties.

24–2. Radio Communications

(fig. 24–1)

a. Radio Communications to Higher Headquarters. The MP company operates radio stations in the following division radio nets:

(1) *Division command net, AM.* Company station is at company headquarters.

(2) *Division operations-intelligence net, FM.* The MP company monitors this FM voice net.

(3) *Division warning broadcast net, AM.* The MP company maintains a monitoring receiver in this net.

(4) *Other nets.* Military police platoons operating in support of committed brigades may monitor the brigade command net.

b. Internal Radio Communications.

(1) *MP company command net, FM.* Company stations in this FM-voice net include company headquarters (NCS), the provost marshal, the company commander, and the three MP platoon headquarters. The security platoon headquarters may enter this net, as required, if within operating range—this will necessitate switching from the platoon net.

(2) *MP platoon command net, FM.* Each of three MP platoons maintain identical radio nets for internal command, control, and coordination. Stations in the net include platoon headquarters (NCS) and the various MP squads.

(3) *Security platoon command net, FM.* Stations in this net include security platoon headquarters (NCS) and radio sets with each security squad.

24–3. Wire

The military police company is not equipped with an organic switchboard. Telephones are authorized for connection to wire lines provided from a nearby signal center or other switching terminal.

24–4. Supplemental Means of Communication

The military police company of the airborne division will also use the other means of communication explained in chapter 13.

24–5. Communication Personnel

The military police company of the airborne division is authorized a communication chief and two radio operators. Refer to chapter 2 for typical duties of communication personnel.

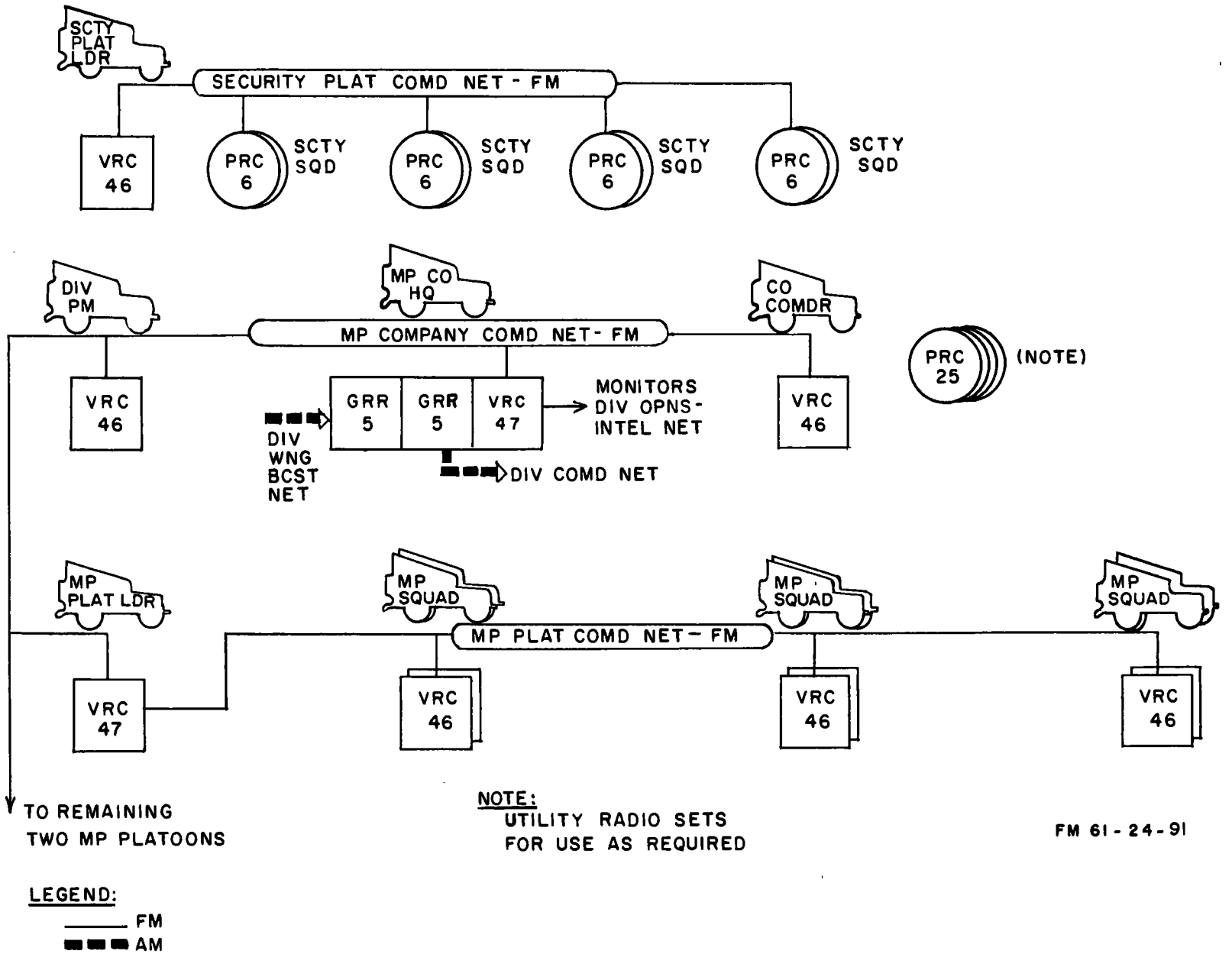


Figure 24–1. Type radio nets, military police company, airborne division.

CHAPTER 25

SUPPORT COMMAND COMMUNICATIONS, AIRBORNE DIVISION

Section I. GENERAL INFORMATION AND HEADQUARTERS COMMUNICATIONS

25–1. Organization

The division support command (TOE 29–51) of the airborne division consists of—

a. Headquarters, Headquarters Company, and Band.

b. Maintenance Battalion.

c. Quartermaster Air Equipment Support Company.

d. Supply Company.

e. Medical Battalion.

f. Administration Company.

25–2. Mission and Operations

a. Mission. The airborne division support command provides division level supply, direct support maintenance (except cryptographic and medical equipment), medical service, parachute and aerial delivery support, and miscellaneous other services for all assigned or attached elements of the division. In addition, the support command commander (or his designated staff officers or subordinate commanders) advise the division commander on supply, transport and maintenance operations, and exercise control over ammunition supply to the division and attached units.

b. Operations. Headquarters of the division support command and designated operating elements thereof enter and become operational in the division airhead as soon as feasible. Other elements of the support command will operate at the departure airfield (or airfields) as appropriate. After ground tactical operations are initiated, designated elements of support command insure timely and effective support by operating forward in the vicinity of brigade trains. From the support area in the airhead proper, administrative and logistical services are extended to units located in the immediate vicinity. Refer to FM 54–2 for more complete details.

25–3. Support Command Operations Platoon, Signal Support Operations Company, Airborne Division Signal Battalion

a. The support command operations platoon provides internal and external communication support to the airborne division support command headquarters. Such support is exclusive of organic FM radio sets, but does include the establishment and operation of a signal center and the extension of communication facilities to units located in the vicinity of support command headquarters. Subordinate elements of the support command operating forward in the division area obtain their communication support from nearby forward area signal centers or from other available sources.

b. Refer to chapter 17 for a discussion of the mission and functions of the support command operations platoon. Additional details are contained in FM 11–57.

25–4. Support Command Signal Officer

a. In the airborne division, support command headquarters is authorized a signal officer who serves the unit special staff and acts as signal advisor to the support command commander. This officer must carefully coordinate the support command communication requirements with the DSO or his designated representative; in particular, the support command signal officer must coordinate closely with the platoon leader of the support command operations platoon.

b. A limited complement of communication personnel are authorized to support command headquarters company and band. These per-

sonnel, sufficient only for internal headquarters operation, include a radio mechanic, radio operators, and switchboard operators. As indicated previously, the bulk of support command headquarters communication assistance is derived from the division signal battalion.

25–5. Communications to Higher Headquarters

a. Radio. Support command headquarters utilizes radio stations in the following nets (fig. 17–6):

(1) *Division command net, AM.*

(2) *Division administrative-logistics net, RATT.* NCS is at support command headquarters.

(3) *Division general purpose net, RATT.* The station at support command headquarters may be designated as NCS.

Note. Support command headquarters radio stations in (2) and (3) above are provided by the support command operations platoon, division signal battalion.

(4) *Division warning broadcast net, AM.* The monitoring receiver is provided by support command headquarters company.

b. Wire and Radio Relay. The support command operations center is provided telephone and teletypewriter circuit access into the division communications system (fig. 17–5). This access is primarily through multichannel radio and carrier terminal facilities furnished by the division signal battalion in the support command signal center. Wire trunks may be laid to support command if the tactical situation is stabilized and not excessively fast-moving. When feasible, a radio relay terminal may be provided by Army at support command headquarters for entry into the army area communication system.

c. Messengers. The support command operations platoon provides one messenger who is normally used as a special messenger when required. Additional messengers from support command may be designated as needed. Normally, scheduled messengers from division headquarters echelons deliver messages to, and pick up messages at, the support command signal center. This will require that using units visit the signal center daily to avail themselves of the scheduled messenger support provided.

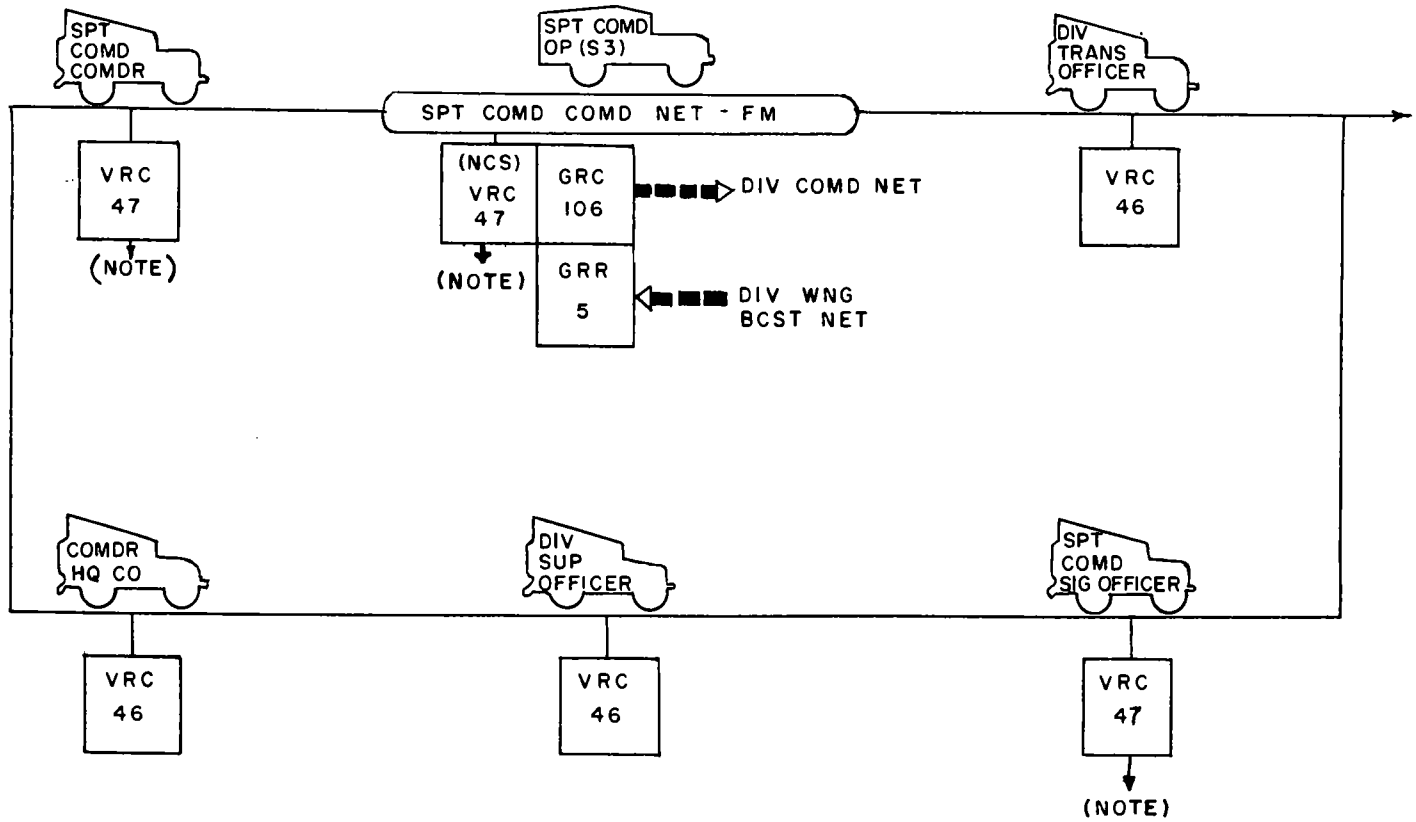
d. RWI. The RWI station at division support command is provided by the support command operations platoon.

25–6. Internal Communications

a. Radio. A command radio net is required for FM voice radio communications from the commander to his principal subordinate commanders and key staff officers (fig. 25–1). Note that subordinate commanders will operate in the support command command net and in the organic radio nets of their respective units.

b. Wire System. The support command wire system provides internal communications between the commander and the principal staff elements of support command headquarters. This wire net does not parallel the command FM radio net but rather affords access into the division communication system. In the division support area, the division signal battalion (support command operations platoon) makes the local field wire installation and provides the signal center services required; however, support command headquarters does establish and operate a switchboard for local CP use (fig. 25–2). Combat service support units in forward areas are collocated with brigade trains, and hence derive their wire connections from the facilities available at this site of operations.

c. Messenger Service. Since no messenger personnel are authorized to support command headquarters, selected personnel may be designated as messengers on an as-required basis.



NOTE:
MONITORS SPT COMD UNIT NETS OR DIV OP-INTEL NET (FM) AS REQUIRED.

LEGEND:

FM

AM

RATT

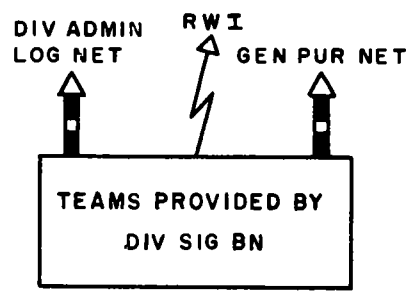


Figure 25–1. Type radio nets, headquarters, headquarters company and band, support command, airborne division.

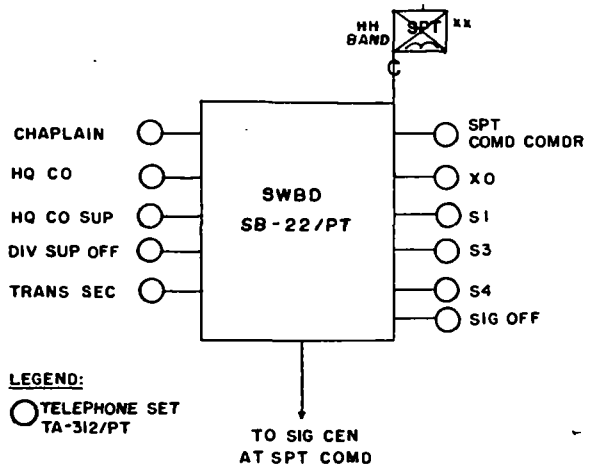


Figure 25–2. Type wire system, headquarters and headquarters company and band, support command, airborne division.

Section II. MAINTENANCE BATTALION COMMUNICATIONS, AIRBORNE DIVISION

25–7. Organization and Mission

a. Organization. The maintenance battalion (TOE 29–55), airborne division, is organized into a headquarters and headquarters detachment, a ground maintenance company, and a transportation aircraft maintenance company.

b. Mission. The mission of the battalion is to provide direct support maintenance of all division materiel except medical, cryptographic, and quartermaster air items. For further details refer to FM 9–30.

25–8. Communication Personnel

a. Headquarters and Headquarters Detachment. In the airborne division, this detachment (TOE 29–56) is authorized neither a communication platoon nor a communication section. However, the unit is authorized two switchboard operators and a wireman. The battalion commander's FM radio is operated by a light truck driver in addition to his primary duties.

b. Ground Maintenance Company. This company (TOE 29–57) is not authorized communication personnel with a primary MOS in a communication specialty. FM radio sets of company headquarters and the three forward support platoons are operated by organic personnel in addition to their other duties.

c. Transportation Aircraft Maintenance Company. This company (TOE 55–99) is authorized a switchboard operator. Company FM radio sets are operated by designated personnel in addition to their other duties.

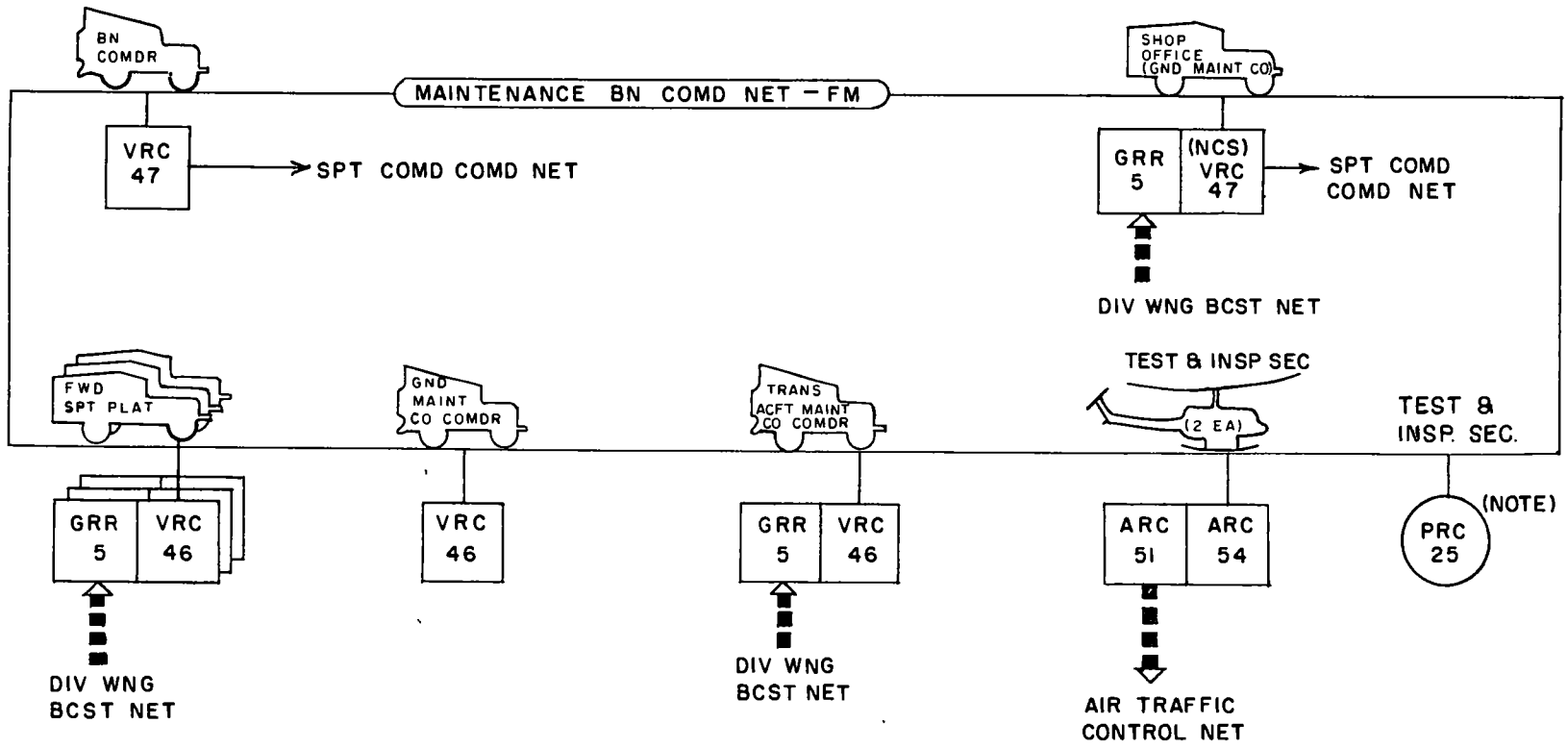
25–9. Radio

(fig. 25–3)

The battalion commander is provided with a radio set to operate or monitor in the support command net—FM as well as in the maintenance battalion command net—FM. Subordinate company commanders maintain stations in the battalion command net, but internal company radio nets are not provided. Note also that the three forward support platoons and the test and inspection section operate in the battalion command net. Division warning broadcast stations (monitoring receivers) are located at each company and with the three forward support platoons.

25–10. Wire System

Maintenance battalion headquarters maintains switching and telephone service for internal battalion use (fig. 25–4). Extension of telephone service to the transportation aircraft maintenance company (normally located at the division airfield or a designated departure airfield) and the forward support platoons (in the brigade trains areas) may be through common-user facilities derived from



LEGEND:

——— FM

▬ ▬ ▬ AM

NOTE:

FOR FLIGHT CHECK-OUT AND GROUND-TO-AIR COORDINATION OF FLIGHT TESTS.

Figure 25–3. Type radio nets, maintenance battalion, airborne division.

the division communication system. The ground maintenance company and the transportation aircraft maintenance company are not authorized organic switchboards or facilities for hard copy teletypewriter.

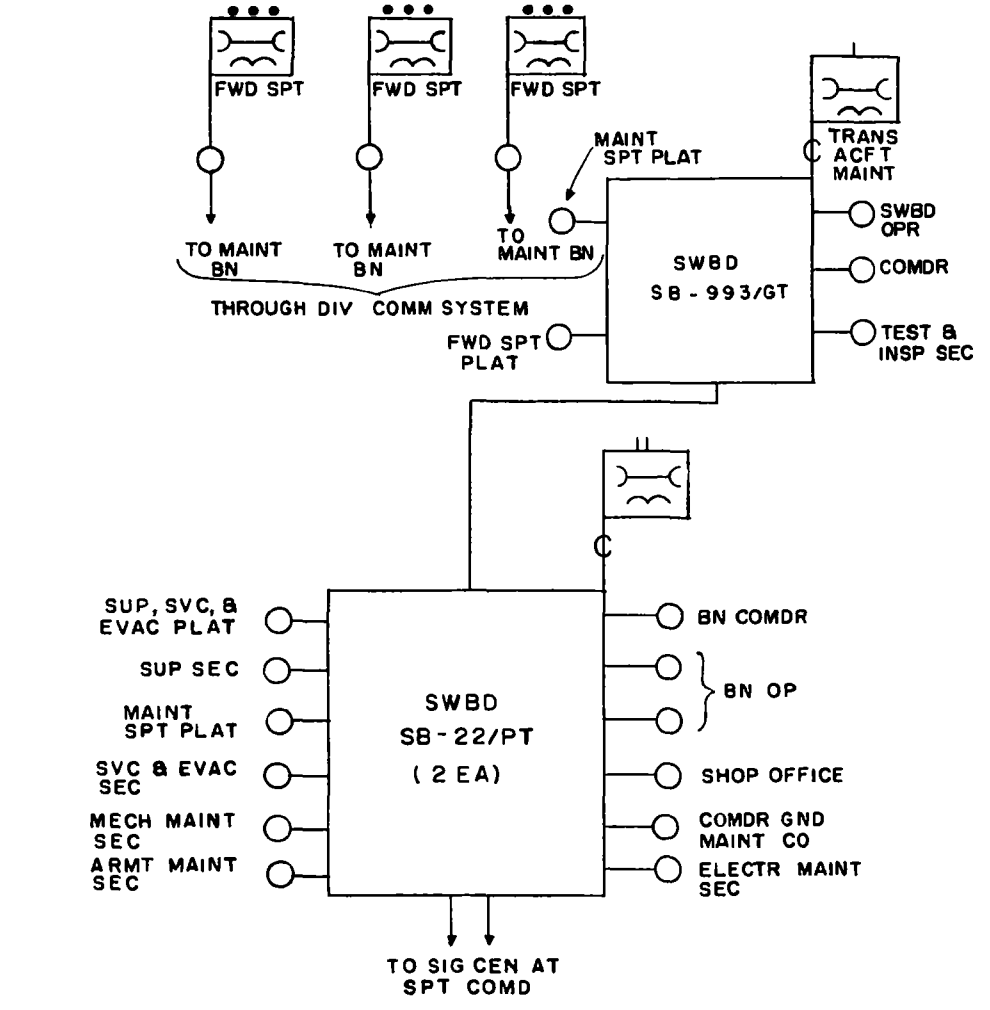


Figure 25–4. Type wire system, maintenance battalion, airborne division.

Section III. SUPPLY COMPANY COMMUNICATIONS, AIRBORNE DIVISION

25–11. Mission

The mission of the supply company (TOE 10–37) is to support the airborne division and its attached units by furnishing all classes of supply, except repair parts, aircraft, medical, and airdrop supplies.

25–12. Communication Personnel

The supply company headquarters is authorized a switchboard operator and a wireman. Operation of company radio sets is performed by personnel in addition to other duties.

25–13. Radio

The company maintains an FM-voice command net for internal control of operations. NCS is in the company commander's vehicle. In addition, the company commander also monitors in the support command command net—FM.

25–14. Wire

The airborne division supply company installs an internal wire system as shown in figure 25–6. Where feasible, wire links are installed directly from support command headquarters to the supply company. If distances preclude direct wire communications to support command headquarters, they may be obtained through the division communication system.

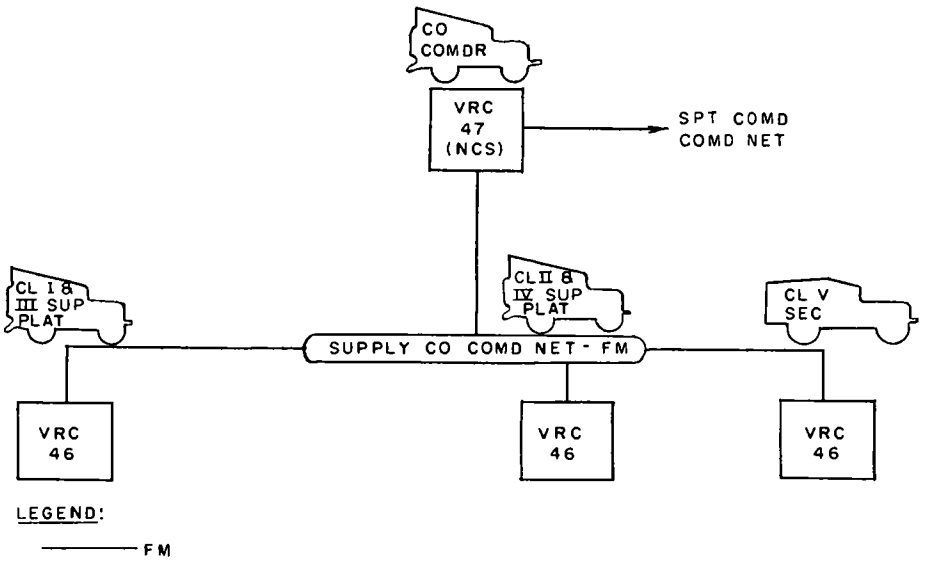


Figure 25–5. Type radio nets, supply company, airborne division.

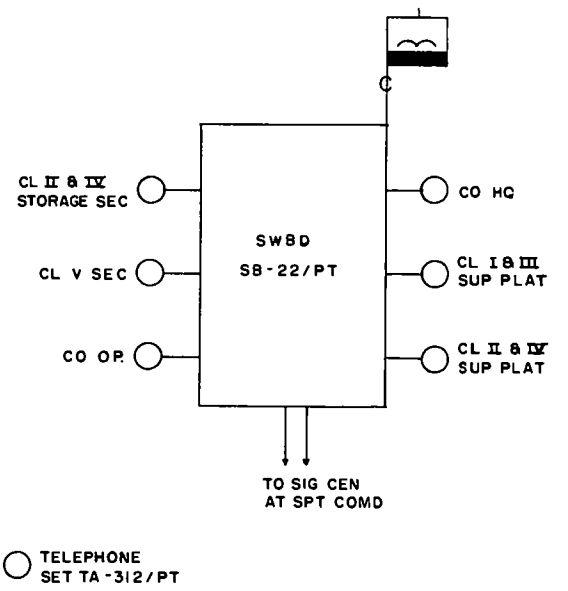


Figure 25–6. Type wire system, supply company, airborne division.

Section IV. COMMUNICATIONS OF THE QUARTERMASTER AIR EQUIPMENT SUPPORT COMPANY, AIRBORNE DIVISION

25–15. Mission

a. The mission of the quartermaster air equipment support company (TOE 10–337) is to support an airborne division by providing—

(1) Acquisition, inspection, packing, storage maintenance, and issue of airdrop equipment required for the airdrop of personnel, supplies, and equipment.

(2) Inspection and technical assistance in packing, rigging, and loading supplies and equipment.

b. Normally, this company operates at the departure airfield (or airfields) or at some other designated airfield site.

23–16. Radio (fig. 25–7)

The company commander and division parachute officer are assigned radio stations in the support command command net. In addition, the division parachute officer has a monitoring receiver in the division warning broadcast net.

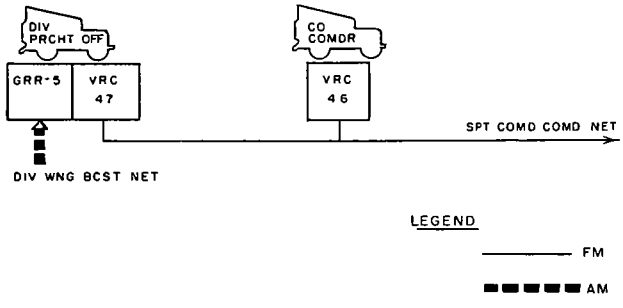


Figure 25–7. Type radio net, quartermaster air equipment support company, airborne division.

25–17. Wire

Figure 25–8 depicts a type internal wire system for the quartermaster air equipment support company. The company is either provided direct wire connections to support command headquarters or is linked to support command through the common-user facilities of the division communication system.

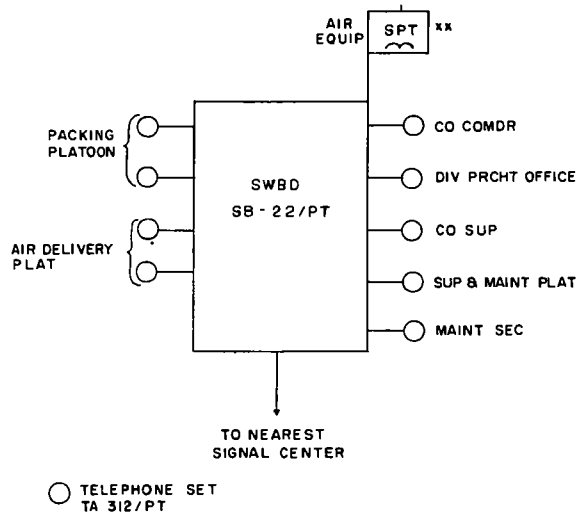


Figure 25–8. Type wire system, quartermaster air equipment support company, airborne division.

25–18. Communication Personnel

The company is authorized a switchboard operator and a wireman. Operation of the company's organic radio set is provided by designated personnel in addition to other duties.

Section V. MEDICAL BATTALION COMMUNICATIONS, AIRBORNE DIVISION

25–19. Organization and Mission

a. Organization. The medical battalion, airborne division (TOE 8–65) is organized into a headquarters and support company and three medical companies.

b. Mission. The mission of the medical battalion is to provide division level medical service to all elements of the division. Additionally, the battalion provides unit medical service on an area basis to all divisional and attached units which have no organic medical element. For further information refer to FM 8–15.

25–20. Communication Personnel

a. Headquarters and Support Company.

This company contains the battalion communication chief. Also authorized are switchboard operators and a wireman. Organic FM radio sets are operated by designated personnel in addition to their regularly assigned duties.

b. Medical Company. Personnel whose primary specialty is in communications are not authorized to this unit; therefore, the company switchboard and radio sets must be operated by designated personnel in addition to other duties.

25–21. General Information on Communications

In the medical battalion, both radio and wire facilities are required to communicate internally and with higher headquarters, and to facilitate ambulance and evacuation services. Battalion headquarters and the medical companies rely on the signal center facilities provided by the division signal battalion in support command and brigade headquarters areas for telephone switching and teletypewriter services.

25–22. Radio

(fig. 25–9)

a. External Nets. Medical battalion headquarters operates an FM radio station in the support command command net. In addition, the battalion commander either monitors or operates in this net.

b. Internal Nets. The medical battalion command net—FM includes the stations shown in figure 25–9. Note that the ambulance platoon and the clearing platoon of battalion headquarters and support company have separate stations in the battalion command net. Each medical company maintains an FM radio net for internal command and control of operations.

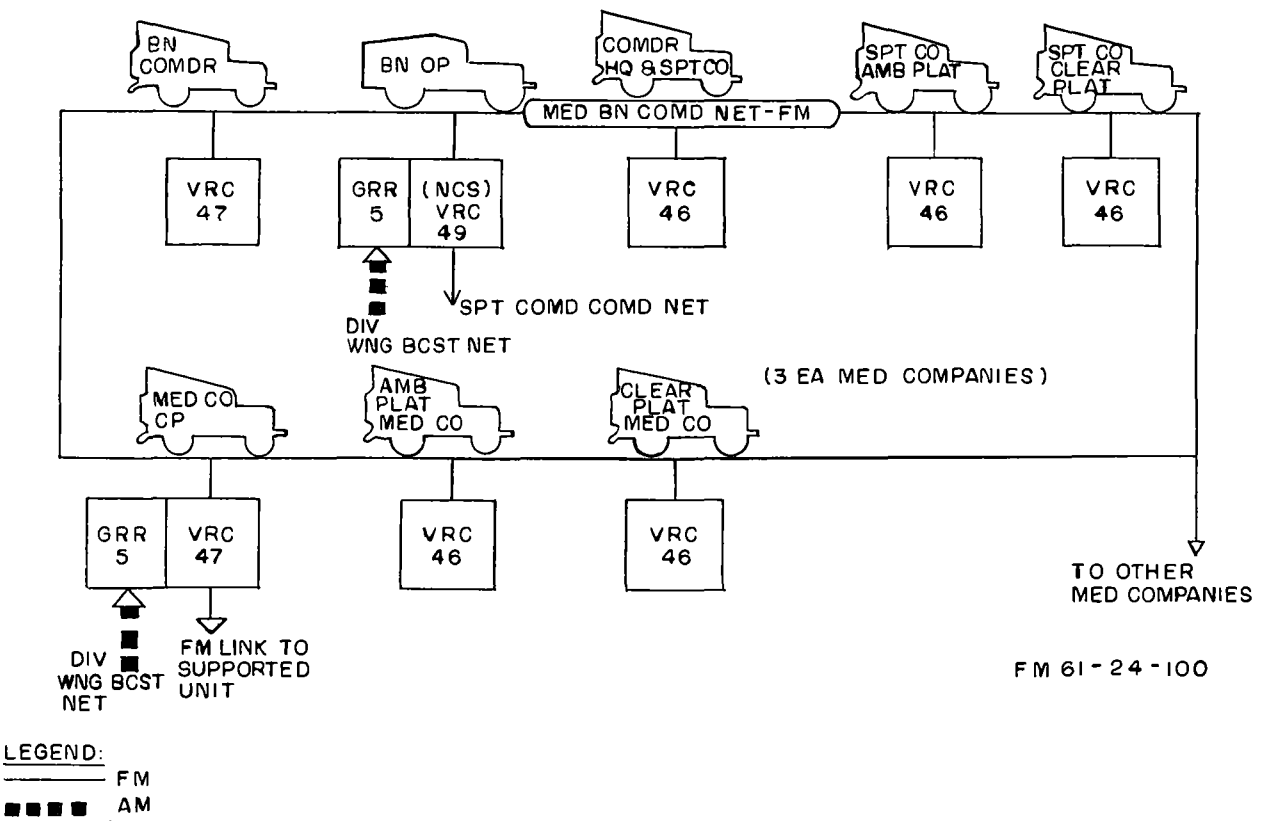


Figure 25–9. Type radio nets, medical battalion, airborne division.

25–23. Wire

(fig. 25–10)

Internal wire systems required both at battalion and medical company level are shown in figure 25–10. Normally battalion headquarters is provided with wire trunk facilities to support command headquarters. Medical companies operating in forward areas may be provided with wire links to the supported brigade or to an accessible forward area signal center.

25–24. Mission and Location

a. Mission. The mission of the administration company airborne division (TOE 12–157) is to—

(1) Serve as a carrier unit which provides support for certain elements of the division special staff.

(2) Provide necessary personnel and administrative support to sustain the division. This includes replacement support and a central mechanized personnel service for all units assigned and attached to the division.

b. Location. The administration company usually constitutes the rear echelon of the airborne division. Thus, during tactical operations, the company is normally located at a site separate and rearward from support command headquarters.

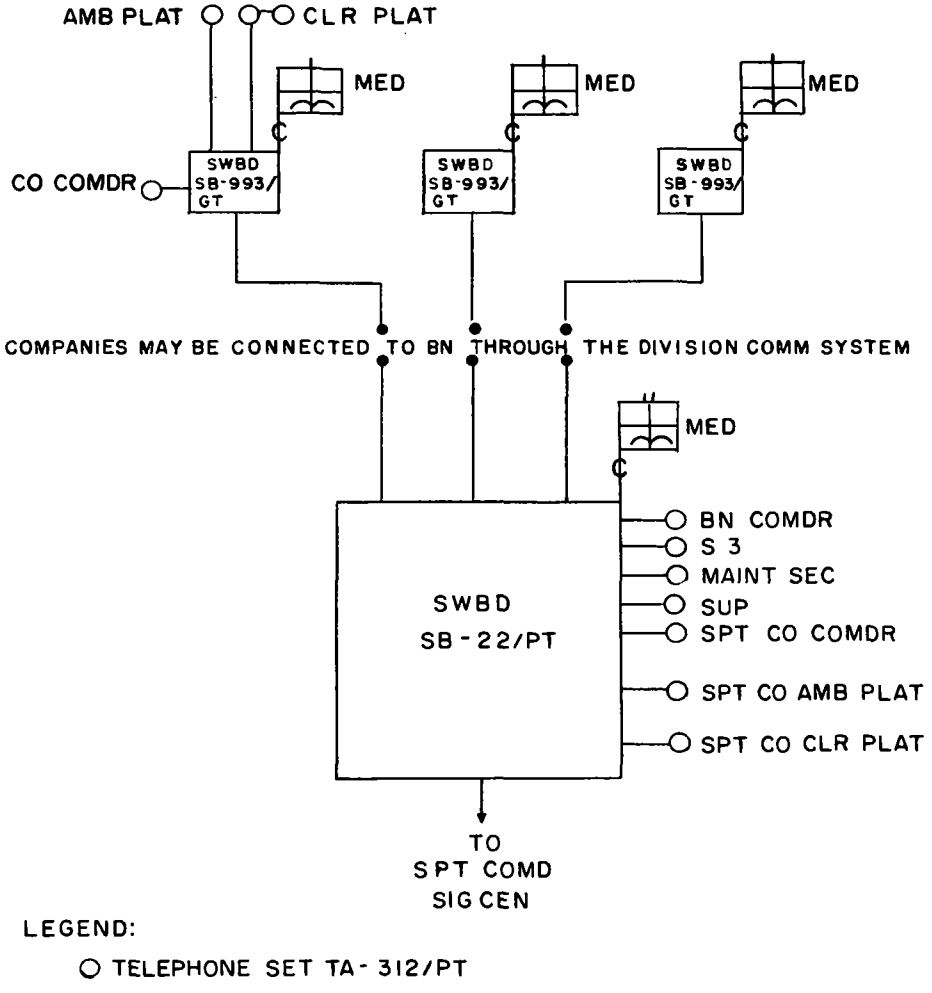


Figure 25–10. Type wire systems, medical battalion, airborne division.

Section VI. ADMINISTRATION COMPANY COMMUNICATIONS, AIRBORNE DIVISION

25–25. Communications

a. Radio. The administration company of the airborne division is not authorized any organic radio equipment. Normally, the company will be located in the corps or army area while the division is deployed in an airhead. While so deployed, the administration company is presumed to be beyond FM voice range of support command headquarters. During normal tactical operations, the administration company and collocated special staff sections will obtain warning information and radio communications from the division signal center operating at the division rear echelon.

b. Wire. Figure 25–11 shows internal switchboard connections in the administration company. Note that the company is provided a wire link to the switchboard operated at the rear echelon signal center; this link serves as access into the division communication system.

c. Communication Personnel. The administration company is not authorized specific communication personnel; therefore, the company switchboard is operated by designated personnel in addition to other duties.

d. Rear Echelon Signal Center. In the airborne division, the administration company will derive most of its communications from the facilities of the rear echelon communications center. Telephones for use of staff sections (AG, IG, SJA, etc.) will be provided by the rear echelon operations platoon, Company A, division signal battalion.

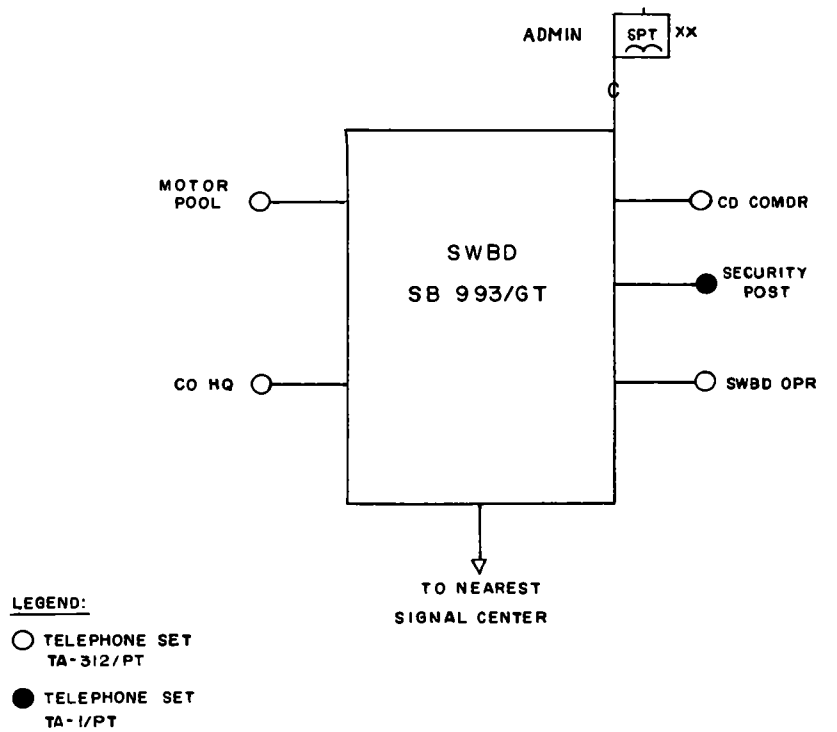


Figure 25–11. Type wire system, administration, company, airborne division.

CHAPTER 26

AIR DEFENSE ARTILLERY COMMUNICATIONS, AIRBORNE DIVISION

Section I. GENERAL INFORMATION

26–1. Division Air Defense Artillery

Air defense for the airborne division may be provided by one of three types of air defense units. Normally, the Air Defense Artillery Chaparral/Vulcan Battalion (when fielded) will be organic to the airborne division. Pending the availability of the Chaparral/Vulcan battalion, airborne division air defense may be provided by assigned or attached air defense artillery automatic weapons battalions, self-propelled (M42), *or by four Air Defense Artillery machinegun batteries, cal. .50 (M55).*

a. Chaparral/Vulcan Battalion. Refer to paragraph 15–1*a* for details on organization.

b. M42 Battalion. Refer to paragraph 15–1*b* for details on organization. This battalion must be airlanded; it is not airdroppable.

c. M55 Battery. This machinegun battery consists of a battery headquarters section and six sections with four machinegun squads each. A machinegun squad consists of one M55 quadruple caliber .50 machinegun, a 2½-ton truck, and a crew of four men.

26–2. Communications Requirements

Refer to paragraph 15–2.

26–3. Communications Personnel

a. Refer to paragraph 15–3 for details on communications personnel in a Chaparral/Vulcan or an M42 battalion.

b. Each M55 battery has a communications chief and sufficient communication personnel for organic communications.

Section II. CHAPARRAL/VULCAN COMMUNICATIONS

26–4. External Radio Nets

The external radio nets discussed in paragraph 15–5 will generally apply to the Chaparral/Vulcan battalion of the airborne division. Note, however, the following difference in the airborne division: the division CG command net is an AM, SSB-voice net; the FM set organic to the ADA battalion operates in an operations and intelligence net, FM-voice, rather than an FM division CG command net (fig. 17–7).

26–5. Internal Radio Nets

For discussion, refer to paragraph 15–5.

26–6. Battalion Wire System

For discussion, refer to paragraph 15–6.

Section III. M42 COMMUNICATION SYSTEM

26–7. General

For the M42 battalion operating with an airborne division, the primary sources of early warning information are the airborne DAS TACPs, and organic surveillance radar. Since the M42 battalion in an airborne division may lack adequate radio tie-in to external sources of air defense control information, such as ADA group or brigade, the division signal battalion must be prepared to provide additional radio communication assistance as required.

26–8. External Radio Nets
(fig. 15–7)

a. Division Command Net, AM. The battalion communications section operates a station in this radio net.

b. Division Warning Broadcast Net, AM. This net is monitored by the battalion headquarters operations and intelligence section and the radar section at each battery headquarters.

c. Division Operations Intelligence Net, FM. Battalion headquarters operates an FM station in this net. In the armored, infantry, and mechanized divisions, this net is designated as the division CG command net—FM.

d. Division General Purpose Net (RATT Net #3). For discussion, refer to paragraph 15–7.

e. Division Operations-Intelligence Net (RATT Net No. 1). If an M42 ADA battalion headquarters station is required in this net, it will have to be established and operated by a radio team from the division signal battalion.

26–9. Internal Radio Nets
Refer to paragraph 15–8.

26–10. Battalion Wire System
Refer to paragraph 15–9.

Section IV. M55 COMMUNICATION SYSTEM

26–11. General
Normally, M55 machinegun battery elements are employed to provide local air defense to ground combat and combat support units. Each M55 is equipped with a portable FM radio set which will accommodate a variety of section and squad support attachments. A type command net is shown in figure 26–1 where the M55 battery is defending a brigade. In this application, the battery is equally split with three sections each attached to two lower echelon units of the defended brigade; battery headquarters is operating at brigade level.

26–12. External Radio Communications
(fig. 26–1)

a. Supported Unit Net. The battery commander's radio set will switch to this net as required. Normally, this is a limiting factor since the battery commander's radio will have greater need to operate in the machinegun battery nets. The supported unit will have but little interest in ADA peculiar messages.

b. Intelligence Nets—AM. The battery headquarters maintains a receiver-only capability to monitor intelligence and early warning information. To rebroadcast to the machinegun sections, it is necessary to switch to the battery command net.

26–13. Internal Radio Nets
(fig. 26–1)

The machinegun section or squad radio sets (FM) are netted together and tied to the defended or supported unit net.

26–14. Battery Wire System
(fig. 26–2)

The wire system is used to link each machinegun within the battery or squad and to supplement available radio nets. The linking of individual weapons by wire would receive first priority.

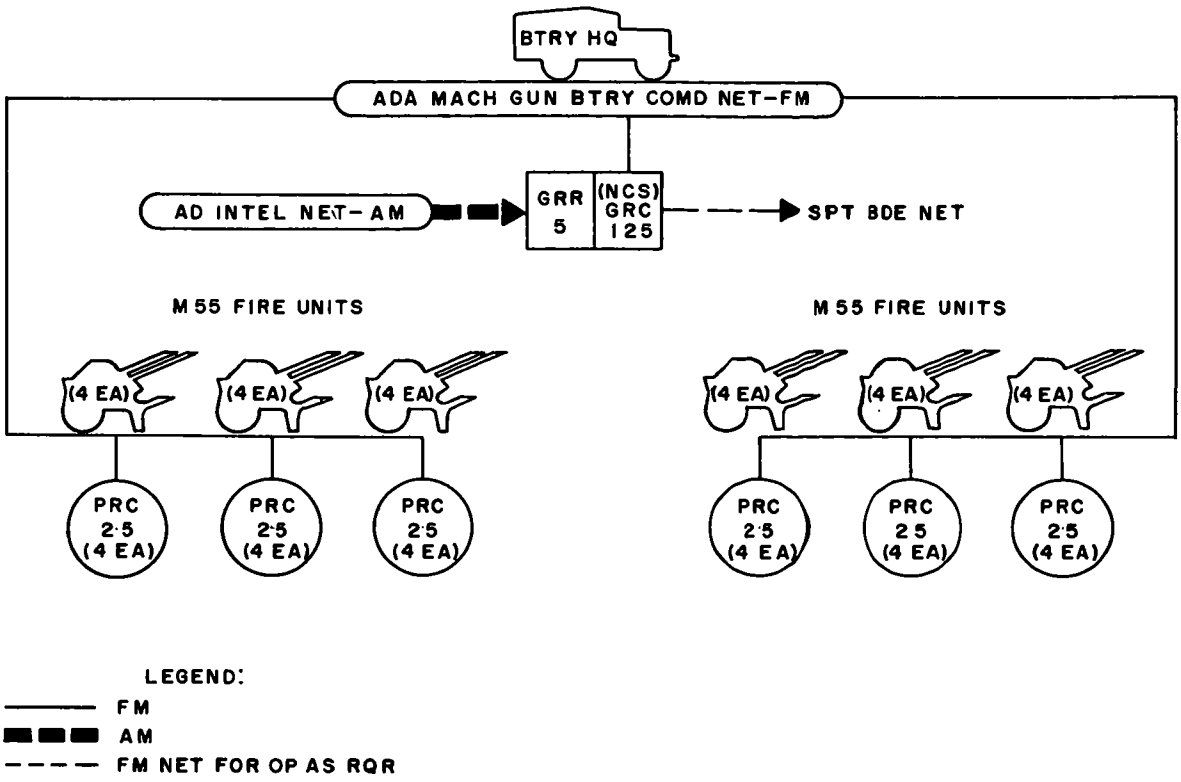
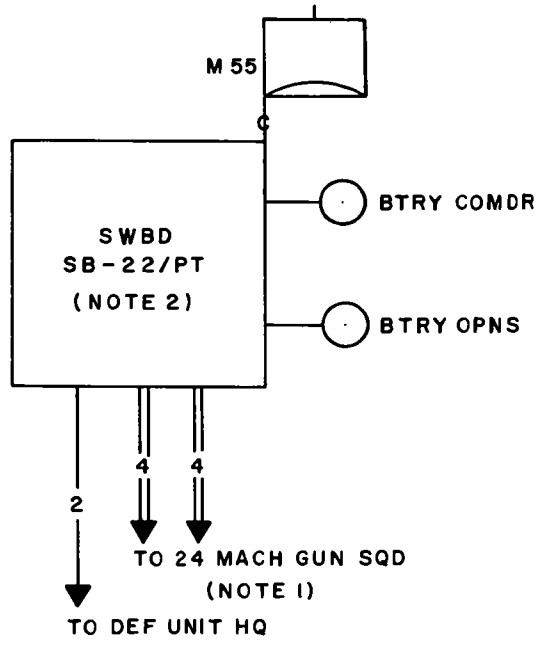


Figure 26–1. Type radio nets, ADA machinegun battery (M55), cal. .50.



NOTES:

LEGEND:

TELEPHONE SET TA-312/PT

1. EACH SQD HAS 1 EA TA-312/PT FOR CONEC TO FLD TRUNK LINES SHOWN OR TO NEARBY DEF UNIT SWBD & THENCE TO M 55 BTRY.
2. ONE ADD SWBD AVAL FOR USE AS RQR.

Figure 26–2. Type wire system, ADA machinegun battery (M55), Cal. .50.

★PART THREE
COMMUNICATIONS IN AIRMOBILE DIVISION

CHAPTER 27
COMMUNICATIONS IN DIVISION HEADQUARTERS AND HEADQUARTERS COMPANY (STANAG 2043)

27–1. Mission

Airmobile division headquarters commands, controls, and supervises the operations of the division and attached units. The headquarters company provides personnel and administrative support for the heaquarters. Refer to FM 61–100 for a more detailed discussion on the capabilities and mission of the division headquarters and headquarters company.

27–2. Communications Provided by Company

a. Airmobile division headquarters and headquarters company provides the vehicular FM radio sets shown in figure 27–1 for staff and command use.

b. In addition, a weather section is included in the division headquarters and headquarters company. The army element of this section provides the trucks, drivers, and the following vehicular radio sets: five FM stations making up the division weather net with stations at division main (NCS), each brigade headquarters, and the aerial surveillance battalion—also note that the division station monitors the division FOC net; an AM–SSB station at division main in a higher headquarters weather net which is capable of either facsimile or RATT operation, but not simultaneously; and an AM–SSB–RATT station at division main in the aviation group operation/intelligence net. The Air Force element provides a division staff weather officer and enlisted assistants to operate USAF-provided, meteorological peculiar equipment as well as the army provided communications equipment mentioned above. The Air Force weather section supporting the division receives weather data from and reports weather data to an Air Force weather center. The teletypewriter equipment used to terminate the circuits at the division headquarters is provided by the Air Force. Refer to AR 115–10/AFR 105–3 for further information on USAF meteorological support for the U.S. Army.

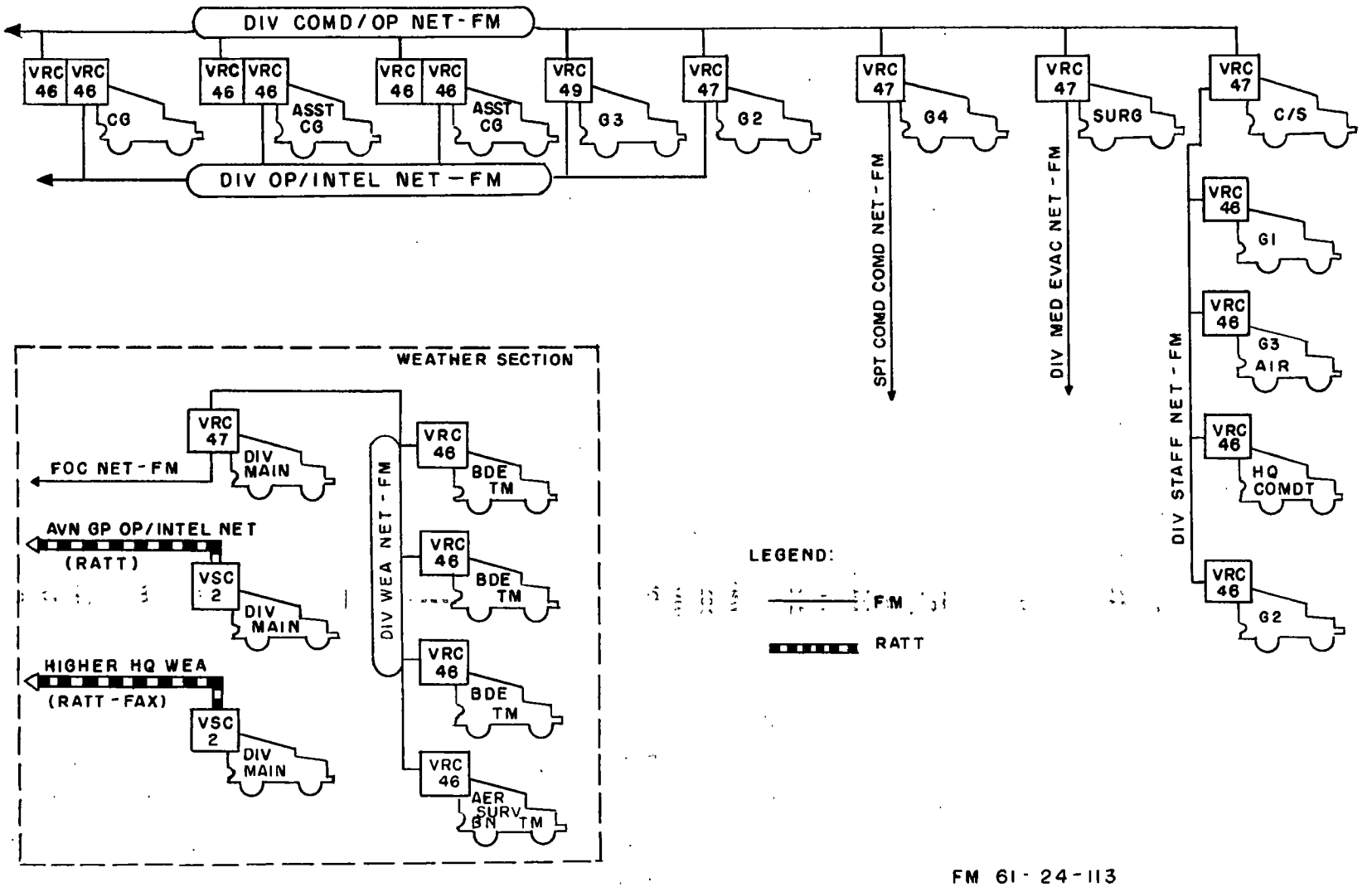


Figure 27–1. Type employment of radio sets, division headquarters and headquarters company, airmobile division.

CHAPTER 28

COMMUNICATIONS AT DIVISION LEVEL (STANAG 2043)

Section I. SIGNAL BATTALION

28–1. General

a. A division signal battalion is organic to each airmobile division. The battalion is part of the combined arms team and provides communications combat support for the division.

b. Each battalion consists of a headquarters, headquarters and service company and a command operations company (fig. 28–1).

c. This chapter presents only summary information on the organization and operations of the division signal battalion. For more detailed information, refer to FM 11–50 and TOE under the 11–205-series.

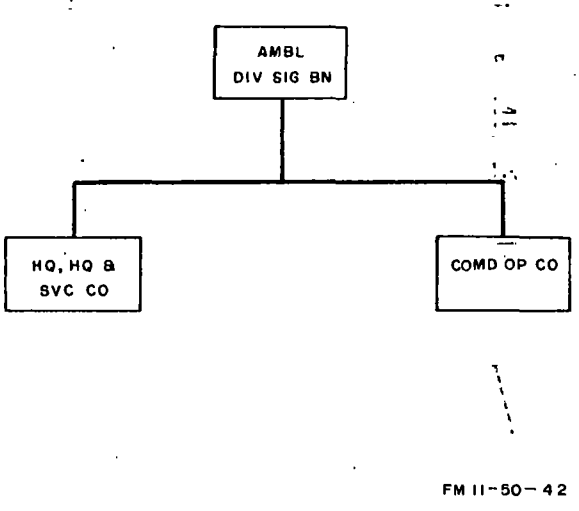


Figure 28–1. Airmobile division signal battalion.

28–2. Battalion Mission and Capability

The overall mission and capability of the division signal battalion are summarized below:

a. Mission. The battalion has the mission to—

(1) Provide signal communications for the various echelons of an airmobile division headquarters and division support command headquarters, exclusive of certain internal single channel radio nets.

(2) Establish and operate the division multichannel network.

(3) Perform limited direct support maintenance of cryptographic equipment organic to the division, and organizational maintenance of equipment organic to the signal battalion.

b. Capability. Consistent with the broad statement on mission requirements, the battalion has the capability to provide the following:

(1) A division signal staff to plan and supervise division communications, communications training, and related signal activities.

(2) Internal communication facilities for division headquarters echelons and division support command.

(3) Multichannel communication facilities linking division headquarters (division main) with each brigade headquarters, division support command, division artillery, aviation group, and air cavalry squadron. The signal battalion installs and operates both the terminals at division headquarters and the terminal at each subordinate command headquarters listed directly bove.

(4) Single channel RATT and voice radio terminals as required at all echelons of division headquarters (main, alternate, and rear),

support command, division artillery, and each brigade headquarters.

(5) Facilities for limited direct support maintenance of division cryptographic equipment.

(6) Facilities for organizational maintenance of organic battalion equipment.

(7) Facilities for message center, messenger, cryptographic, and teletypewriter service at echelons of division headquarters and division support command.

28–3. Headquarters, Headquarters and Service Company
(fig. 28–2)

The headquarters, headquarters and service company (TOE 11–206) has the mission and capability to—

a. Plan, direct, and coordinate the operations and training of the battalion and to provide the headquarters facilities with which the signal battalion commander exercises control.

b. Provide the airmobile division with a signal officer, signal staff, and staff facilities.

c. Provide administrative, messing, and logistical support for the battalion.

d. Provide limited direct support level maintenance of cryptographic equipment for the entire division, and organizational maintenance on organic equipment of the signal battalion.

e. Provide COMSEC logistical support.

28–4. Command Operations Company
(fig. 28–3)

a. Mission. The mission of the command operations company is to—

(1) Provide signal communications for the echelons of division headquarters and the division support command headquarters exclusive of internal radio nets.

(2) Provide signal center service to units located in the vicinity of division headquarters

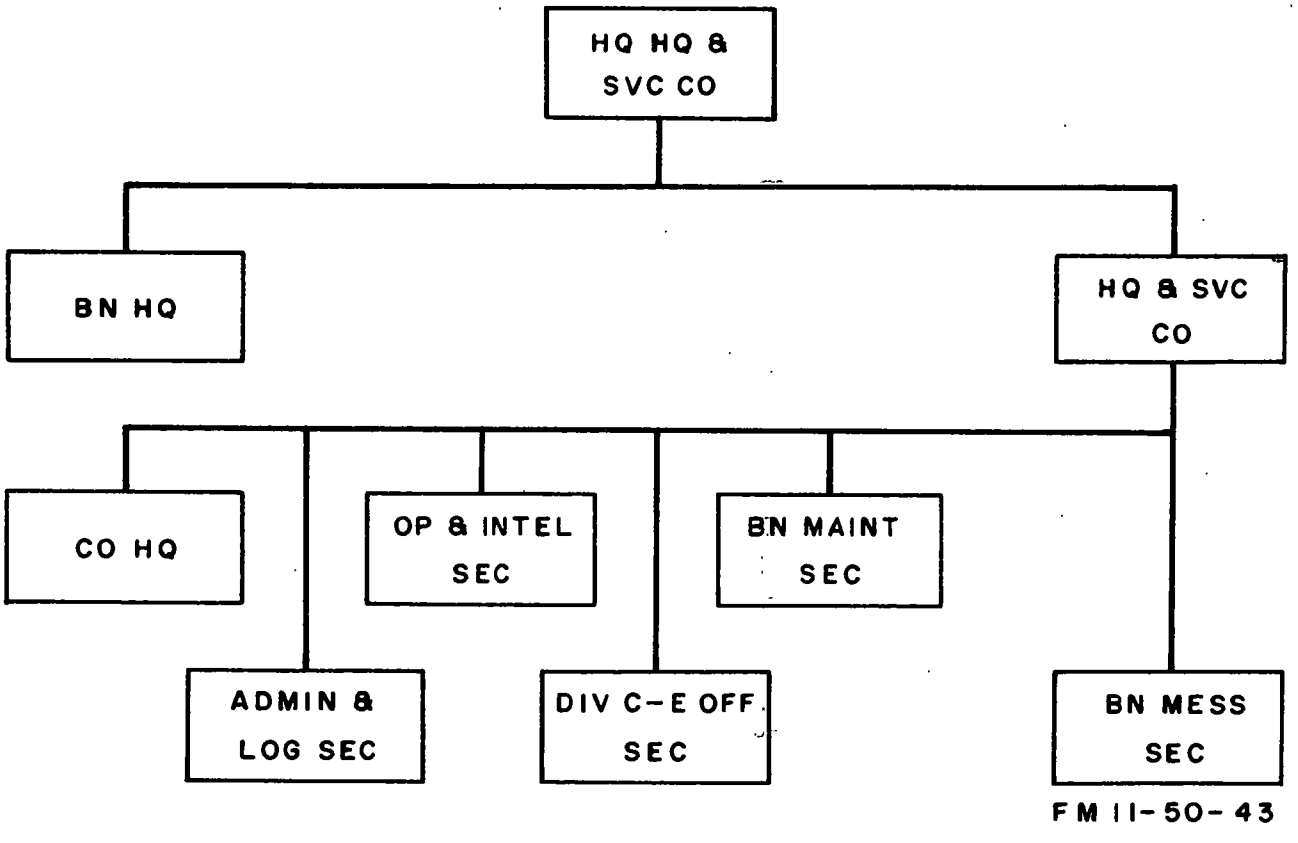


Figure 28–2. Headquarters, headquarters and service company, signal battalion.

echelons and support command—all facilities provided are supplemental to organic facilities.

(3) Establish and operate all terminals in the division radio multichannel network.

(4) Provide and operate the net control and other single channel radio stations as required for the division and the signal battalion.

b. Capability. To fulfill its mission requirements, the command operations company has sufficient capability in personnel and equipment to—

(1) Establish and operate the following common signal facilities for division main, division alternate or division forward, division rear, and division support command:

(*a*) Message center, motor messenger, cryptographic, and teletypewriter facilities.

(*b*) Manual telephone switchboard and local telephone service.

(*c*) Single channel radio stations to include RWI, RATT, AM-voice-CW, and FM voice.

(2) Install, operate, and maintain division FM voice and RATT stations at the command post locations of division artillery and each brigade.

(3) Install, operate, and maintain radio multichannel stations at division headquarters, support command, division artillery, each brigade headquarters, and at the headquarters of other designated units operating directly under division control.

(4) Provide signal center service to units located in the vicinity of division headquarters echelons and division support command. This service it to include the handling of message traffic and the provision of telephone switching service and connecting lines supplemental to the organic facilities of the units served.

(5) Install, operate, and maintain three FM-voice aerial radio retransmission stations (repeaters); and install and maintain two communications centrals for use in airborne command posts. (Both the repeater stations and the communications centrals are suitable for operation from aircraft provided either by the division aviation group or by aviation units not organic to the division.)

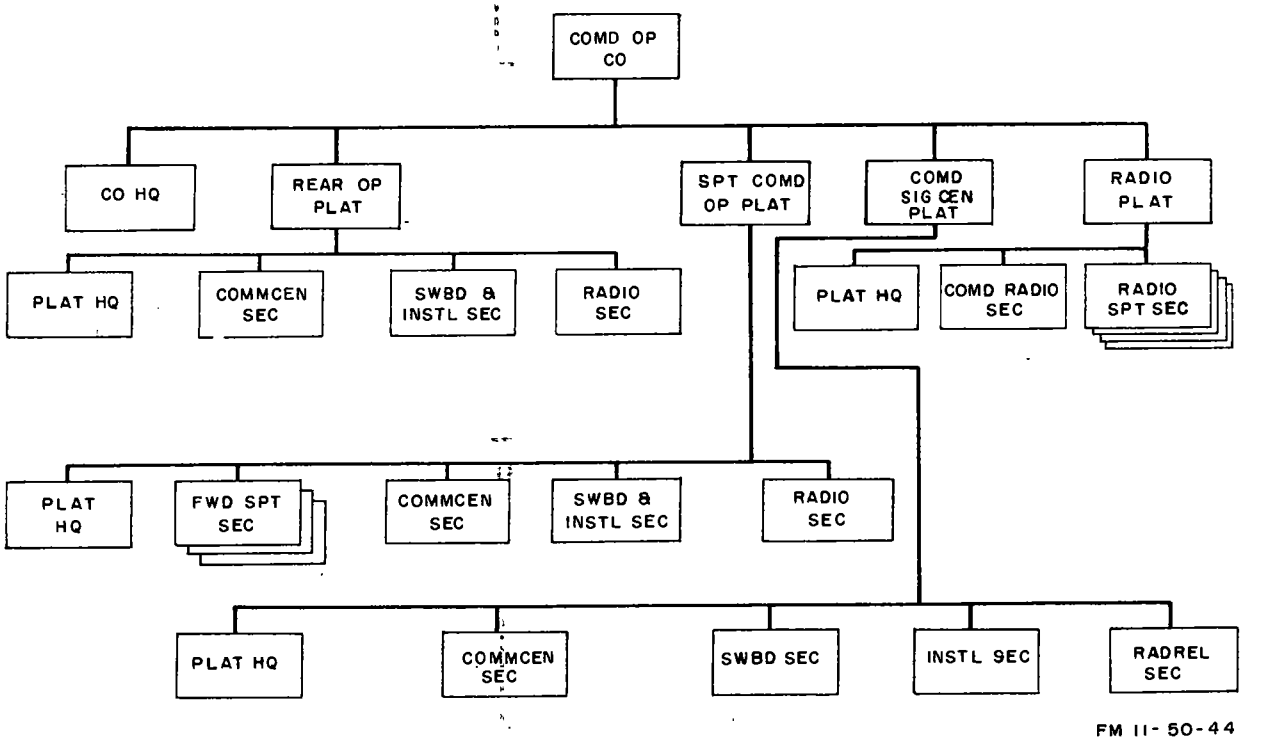


Figure 28–3. Command operations company, signal battalion.

Section II. AIRMOBILE DIVISION COMMUNICATIONS SYSTEM

28–5. Characteristics of the System

Communications required in airmobile division operations may be briefly described as ground-to-ground, air-to-ground, and air-to-air. In short, airmobile division forces require adequate communications when on the ground and with supporting army aircraft, their prime source of transportation and immediate support on the battlefield. In addition, aircraft-to-aircraft communications are also necessary, especially when command posts (CP's) are airborne or aerial radio retransmission is required. Other characteristics of airmobile division communications are as follows:

a. Communications to widely dispersed units with emphasis on compact, lightweight, air transportable, air operable/ground operable, and air-droppable equipments.

b. Flexibility to meet changes in division task organization and to facilitate the relocation of units, command posts, and installations.

c. Limited secure facilities for transmitting classified information. All RATT nets are normally provided on-line security and, when possible, VHF/FM-Voice command nets for the division and brigade will be voice secure.

d. Heavy reliance on single channel radio as a primary means of communications.

e. Multichannel radio communications on a point-to-point basis with all terminals linked to division main.

f. Emphasis on common-user circuits derived from the multichannel network, and limited provision for sole-user circuits which must have specific justification for weapons employment and similar purposes.

g. Integration, when feasible, with the corps command or field army area communications system with terminal facilities at the division level provided by the higher headquarters.

h. Successfully communicating in an enemy signal intelligence and electronic countermeasures environment with the use of communications security and electronic countercountermeasures procedures.

28–6. Responsibility

Refer to paragraph 6–8 which describes the responsibility of the division C–E officer for division level communications.

28–7. Composition of the System

The division communications system as established, equipped, and operated by airmobile division signal battalion will normally consist of the following:

a. Signal centers at division main, division alternate or division forward, division support command, and division rear. Signal center resources listed above may be consolidated depening on the situation.

b. Point-to-point multichannel radio communications links from division main to the three brigades, division artillery, division support command, aviation group, and the air cavalry squadron.

c. Single channel voice radio nets, both AM and FM.

d. Aerial radio retransmission stations (FM–voice).

e. Communications centrals for use in airborne CP's.

f. Single channel RATT sets.

g. Aerial messenger service from division main to all major subordinate commands of the division. (Aircraft are provided by the division aviation group.) Limited motor messenger service may be usable to elements located near established division signal centers.

h. Radio wire integration stations provided by the division signal battalion at each established signal center (division main, alternate or forward, support command and rear).

28–8. Signal Centers

The command operations company of the airmobile division signal battalion equips and operates all division level signal center facilities.

Normally, these signal centers are located at division main, division alternate or forward, division support command and division rear. Each of these signal centers provides communications center facilities, a switching central, a technical control center, and appropriate external means of communications. Major equipments used in signal center operations such as switching centrals, telegraph terminals, and multichannel terminals are lightweight and usually trailer mounted to facilitate air transportation by organic rotary wing aircraft. Economy and versatility in equipment design is incorporated wherever possible; for example, there is no separate patching panel at each of the signal centers, but some circuit patching capability is incorporated into the telephone switching centrals used. Refer to FM 11-50 for more detail on signal center operation.

a. Signal Center, Division Main. This signal center is equipped and operated by the command signal center platoon, command operations company. The center provides the full facilities of a typical signal center including both multichannel and single channel radio links from division main to the principal subordinate headquarters of the division. Communications links to higher headquarters with terminals provided and operated by higher headquarters are also located at division main.

b. Signal Center, Division Alternate. This signal center is equipped and operated by the command signal center platoon from resources remaining after division main is operable. The center provides the basic facilities of a typical signal center, but does not normally operate any multichannel radio terminal. Basic communication into the division communication system will be by single channel radio. If division main is scheduled for phasing out, with alternate designated as the new division main, multichannel radio terminals will normally be air-transported to the division alternate site on a carefully planned and schedule basis. When additional multichannel radio equipment is authorize to provide for the establishment of a division alternate or division forward, multichannel terminal shuttling of multichannel terminal equipment will not be necessary.

c. Signal Center, Division Support Command. This signal center, located at support command headquarters, is equipped and operated by the support command operations platoon, command operations company. The center provides all the services of a typical signal center. A multichannel radio terminal located at this site provides telephone and teletypewriter communications through the division multichannel network. Long range communications is also afforded by single channel radio stations both as a primary means and supplementary facilities to multichannel radio. Under certain operational conditions, such as stability operations, support command and division main may be combined in a division base of operations with an attendant pooling of signal center resources. In addition to signal center operations, the support command operations platoon provides the personnel and equipment for three forward support sections to provide communications for combat service support operations at each of three brigade bases (or brigade trains) for communications to support command headquarters.

d. Signal Center, Division Rear. This signal center is equipped and operated by the rear operations platoon, command operations company. The center provides normal signal center service at the division rear echelon. Communication is primarily by single channel radio since a multichannel radio terminal normally is not provided by the signal battalion for the exclusive use of division rear. Under certain operational conditions, division rear may be combined with other division headquarters echelons to form a division base of operations; in such an instance, signal center facilities are pooled.

28-9. Multichannel Network

In the airmobile division, the radio multichannel network consists of point-to-point links installed and operated by the command operations company of the signal battalion. Figure 28-4 illustrates a type configuration of these facilities. Final determination of network configuration is made by the DSO; his decisions are based on the desires of the division com-

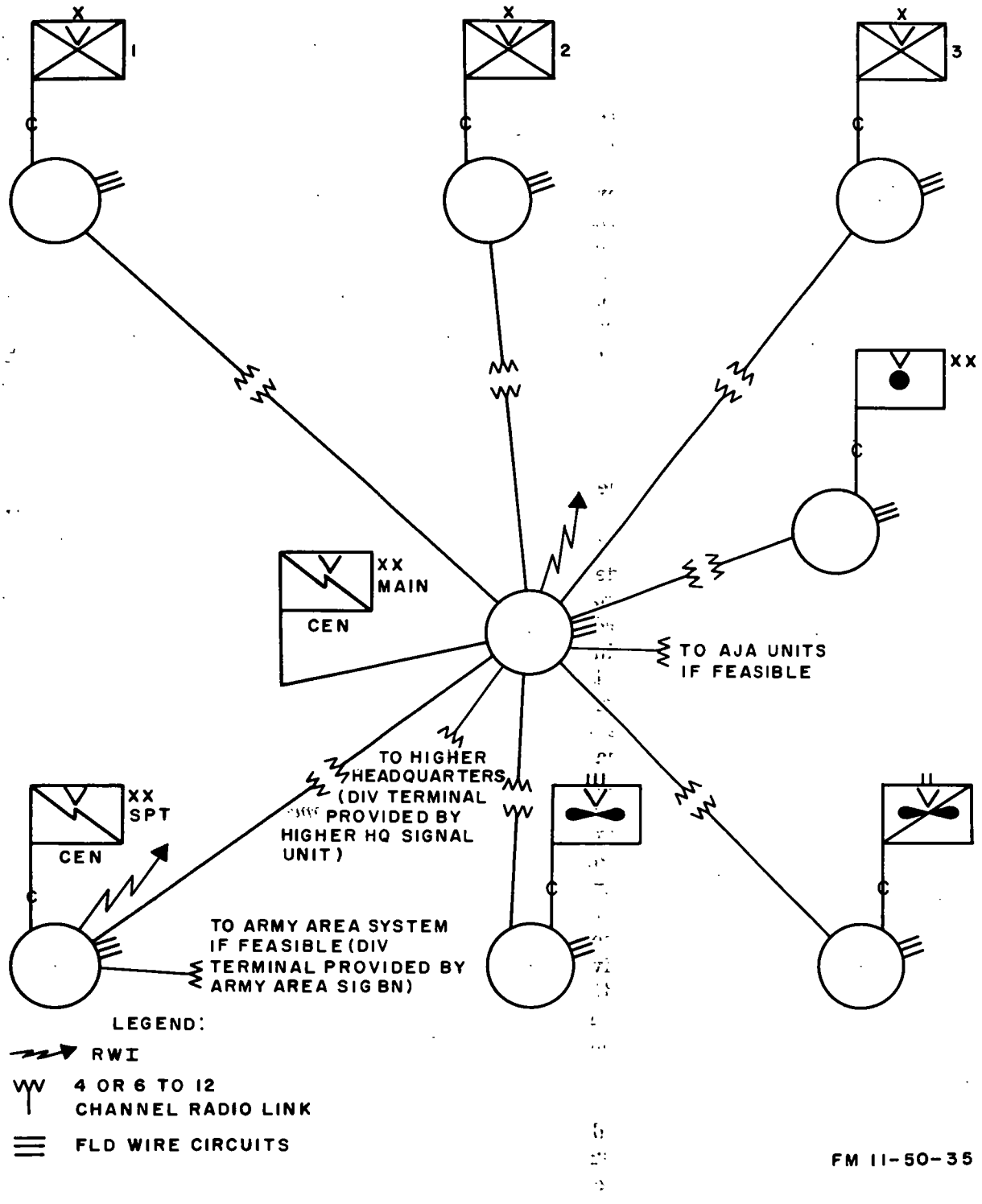


Figure 28-4. Type configuration of radio multichannel portion of airmobile division communications system.

mander, the division SOP, the tactical situation, terrain, and the frequencies and equipments available.

28–10. Wire and Cable Construction

In airmobile division operations, wire and cable installed by the signal battalion are used extensively for interconnections within CP or base camp complexes. These means, however, are not economically suitable for trunk circuits to major subordinate units, which are usually separated by relatively long and unsecured distances. In almost every instance in airmobile division operations, radio, either single or multichannel, represents the most practical means for long distance communications.

28–11. Internal Radio Nets
(fig. 28–5)

Type radio nets for operation within the division are described below.

a. Division Command-Operations Net (FM). This voice radio net is primarily intended for communications from the division commander and his staff to designated major subordinate commanders an their staffs. Stations in this net include division main as net control station (NCS), division alternate, division artillery, division support command, each of the three brigades, aviation group, air cavalry squadron, engineer battalion, the signal battalion, and the division ADA unit when assigned or in support. Also entered into this net as required are the aircraft or vehicular radio sets of the division commander, subordinate commanders, and designated staff officers. The division signal battalion provides the vehicular radio sets at division main, division alternate, division support command, and the signal battalion heaquarters as well as the FM voice radio sets for aerial retransmission and division airborne command posts.

b. Division Operations-Intelligence Net (FM). This voice radio net is established primarily for the joint use of the division G2 and G3 for conducting functions with the respective S2's and S3's of the major subordinate commands. Vehicular-mounted stations in this net include division main (NCS), division alternate, division artillery, division support command, aviation group, the engineer battalion, the three brigades, the air cavalry squadron, and the MP company. The division signal battalion provides the radio sets at division main, division alternate, division artillery, division support command, at each of the three brigades, division ariborne CP, and aerial retransmission stations. This net is especially valuable for the intelligence function in airmobile operations where timely information must be immediately provided over greater-than-normal ranges embracing larger-than-normal areas.

c. Division Command No. 1 (RATT). This net provides a primary command RATT link from division main (NCS) and division alternate to division artillery, division support command, each of three brigades, air cavalry squadron, engineer battalion, and the signal battalion. The signal battalion provides the radio sets at division main, division alternate, division artillery, division support command, the three brigades, and signal battalion headquarters. Communications over this primary communication link is possible in the following modes: RATT, continuous wave (CW), and voice. (This also applies to other RATT sets operating in the airmoble division.) The RATT mode at division main is remoted into the DTOC.

d. Division Command Net No. 2 (RATT). Primarily, command net No. 2 links division main (NCS), division alternate, division artillery, the three brigades, and the air cavalry squadron. This net provides communications from the division commander and DTOC (intelligence and operations) to subordinate commanders and their tactical operations centers. (The division station is remoted into the DTOC.) Stations provided by the division signal battalion are at division main, division alternate, division artillery, and the three brigades.

e. Division Administrative-Logistics Nets No. 1, 2, 3, and 4 (RATT). These nets constitute primary communications links for the purpose indicated. Each of administrative-logistics nets No. 1, 2, and 3 interconnects the di-

STATION / NET	INTERNAL NETS: DIV COMD/OP NET (FM-VDICE)	DIV DP/INTEL NET (FM-VDICE)	DIV COMD NET #1 (RATT)	DIV COMD NET #2 (RATT)	DIV ADMIN/LOG NET #1 (RATT)	DIV ADMIN/LOG NET #2 (RATT)	DIV ADMIN/LOG NET #3 (RATT)	DIV ADMIN/LOG NET #4 (RATT)	G-2 AIR INFD NET (RATT)	EXTERNAL NETS: AF SPOT REPT RCVR NET (UHF)	AF AIR REQ NET (AM-VOICE)	AF TAC AIR NET (UHF-AM)	ARMY AIR REQ NET (RATT)	HIGHER ECH COMD NET (RATT)
DIV MAIN	VRC-49 (S) (NCS)		VSC-2 (S)[d] (NCS)	VSC-2 (S) (NCS)				VSC-2 (S)	VSC-2 (S) (NCS)		(A) (TACP)	(A) (TACP)	(C)	(C)
DIV ALTN	VRC-49 (S)[b, d] (NCS)		VSC-2 (S)	VSC-2 (S)										
DIV ABN CP	ARC-122 (S)[b]													
DIV AERIAL RETRANS	ARC-121 (S)[b]													
DIV ARTY	VRC-49	VRC-46 (S)	VSC-2 (S)	VSC-2 (S)				VSC-2 (S)						
DIV REAR								VSC-2 (S)						
DISCOM	VRC-49 (S)		VSC-2 (S)		VSC-2 (S) (NCS)	VSC-2 (S) (NCS)	VSC-2 (S) (NCS)	VSC-2 (S) (NCS)						
BDE #1	VRC-49	VRC-46 (S)	VSC-2 (S)	VSC-2 (S)	VSC-2 (S)						(A) (TACP)	(A) (TACP)		
FWD SPT ELM #1					VSC-2 (S)									
BDE #2	VRC-49	VRC-46 (S)	VSC-2 (S)	VSC-2 (S)		VSC-2 (S)					(A) (TACP)	(A) (TACP)		
FWD SPT ELM #2						VSC-2 (S)								
BDE #3	VRC-49	VRC-46 (S)	VSC-2 (S)	VSC-2 (S)			VSC-2 (S)				(A) (TACP)	(A) (TACP)		
FWD SPT ELM #3							VSC-2 (S)							
MANEUVER BNS											(A) (TACP)	(A) (TACP)		
AVN GP	VRC-46	VRC-46						VSC-2	VSC-2					
SURVL PLAT									VSC-2					
AIR CAV SQDN	VRC-49	VRC-49	VSC-2	VSC-2				VSC-2			(A) (TACP)	(A) (TACP)		
ENGR BN	VRC-49	VRC-49	VSC-2					VSC-2						
SIG BN	VRC-49[c] DSO (S); DSO SEC[c] VRC-49		VSC-2 (S)											
MP CO		VRC-47												
DASC											(A)	(A)		
MED BN								VSC-2						
MAINT BN								VSC-2						
ACFT MAINT BN SUP BN								VSC-2						

LEGEND:

(S) RADID SET PROVIDED BY DIV SIG BN

(C) RADID SET PRDVIDED BY CDRPS DR OTHER HIGHER HQ

(A) AIR FDRCE RADID SET

a. ARMY RADID SET MAY BE DIVERTED TD AF TAC AIR DIRECTIDN NET IF TACP IS UNEQUIPPED

b. MAY ALSO BE USED FOR COMMO IN OTHER RADID NETS

c. RADIO SET ALSO DPERATES IN SIG BN COMD NET

d. REMOTE INTO DTOC

TACP - TACTICAL AIR CDNTROL PARTY

DASC - DIRECT AIR SUPPDRT CENTER

FM 11-50-39

Figure 28–5. Type airmobile division radio nets.

vision support command (NCS), one brigade, and the forward combat service support element serving the brigade. Administrative-logistics net No. 4 provides communications from division support command (NCS) to division main (G4), division artillery, division rear, air cavalry squadron, aviation group, and engineer battalion, medical battalion, maintenance battalion, and transportation aircraft maintenance and supply battalion. The signal battalion installs and operates all radio sets in these nets except those at aviation group, air cavalry squadron, medical battalion, maintenance battalion, transportation aircraft maintenance supply battalion, and engineer battalion.

f. G2 Air Information Net (RATT). The function of this net is to provide communications between G2 air at DTOC and the aerial surveillance platoon. Also included in this net is a station at aviation group headquarters. Traffic over this net will include surveillance instructions and intelligence information derived from aerial reconnaissance, either photographic or visual. Normally, the division station is remoted into the DTOC. The station at division main is provided by the division signal battalion.

28–12. External Radio Nets
(fig. 28–5)

Equipment and personnel for operation in external radio nets (nondivisional) are provided by higher army headquarters or by Air Force and/or Navy personnel. However, all equipment thus provided must be airtransportable. Type external radio nets of the airmobile division are discussed below:

a. Air Force Air Request Net (AM). The radio set at the airmobile division main is provided by an Air Force tactical air control party. The division station in this net, normally located near and remoted into the DTOC, is primarily intended for immediate air requests to the AF direct air support center. Current signal battalion TQE equipment allocations of the airmobile division do not provide additional radio equipment to supplement this facility. AF TACP radio stations are also required at brigade, maneuver battalion, and air cavalry squadron headquarters of the airmobile division. Although operation in this net is normally by AM voice, the greater distances involved in airmobile operations may require that RATT sets or CW be employed from division elements to the DASC.

b. Air Force Tactical Air Direction Net. This net, also AF provided, is used by the TACP's to direct Air Force aircraft flying direct support missions for the division. As an interim measure, the division signal battalion may be required to provide a VHF AM voice station at division main and division forward (or alternate); normally, however, the division station will be provided by the TACP.

c. Higher Headquarters Command Net (RATT). Single channel radio sets at division headquarters for communications in corps or army command nets are provided and operate from the resources of the higher heaquarters.

28–13. Aerial Radio Retransmission

In airmobile operations, because of the longer distances involved, aerial retransmission of single channel voice radio signals will frequently be necessary This requirement specifically applies to FM voice radio communications. To fulfill this need, the airmobile division signal battalion provides three FM voice radio repeater sets suitable for operation in aircraft. Each repeater set affords simultaneous retransmission in three separate FM voice radio nets. When using these nets, care must be exercised in providing maximum communications security. Communicators should be trained to react properly to enemy attempts at jamming friendly radio communications and to enemy intrusion into nets with imitative communications. Signal security is a command responsibility and all responsible personnel should be indoctrinated on the contents of FM 32–5, FM 32–20, and FM 32–20A.

28–14. Airborne Command Posts

Airborne command posts are particularly essential for command and control of airmobile

operations. In fulfillment of this requirement, helicopters used for command and control are equipped with an AN/ASC–10 or AN/ASC–11 communications central console. The console is issued as a component for the helicopter and provides at least two FM, one UHF or VHF, and one HF radio; plus an intercommunications system that allows inter-aircraft communications, and if wired into the helicopter radios these sets may also be used.

28–15. Telephone Switching at Airmobile Division Signal Centers

Type telephone distribution and switching systems for selected airmobile division signal centers are shown in figures 28–6, 28–7, and 28–8. Refer to FM 11–50 for additional detail.

28–16. Messenger Service

a. Motor messenger service is provided at each signal center operated by the airmobile division signal battalion. In airmobile operations, however, the longer distances involved will compel greater reliance on air messenger service with motor vehicle runs restricted to feasible distances in the immediate CP area. Aircraft for messenger service will be provided by the division aviation group or other sources; messengers will be provided by the signal battalion.

b. Other generalized information on division level messenger service is given in paragraph 6–19.

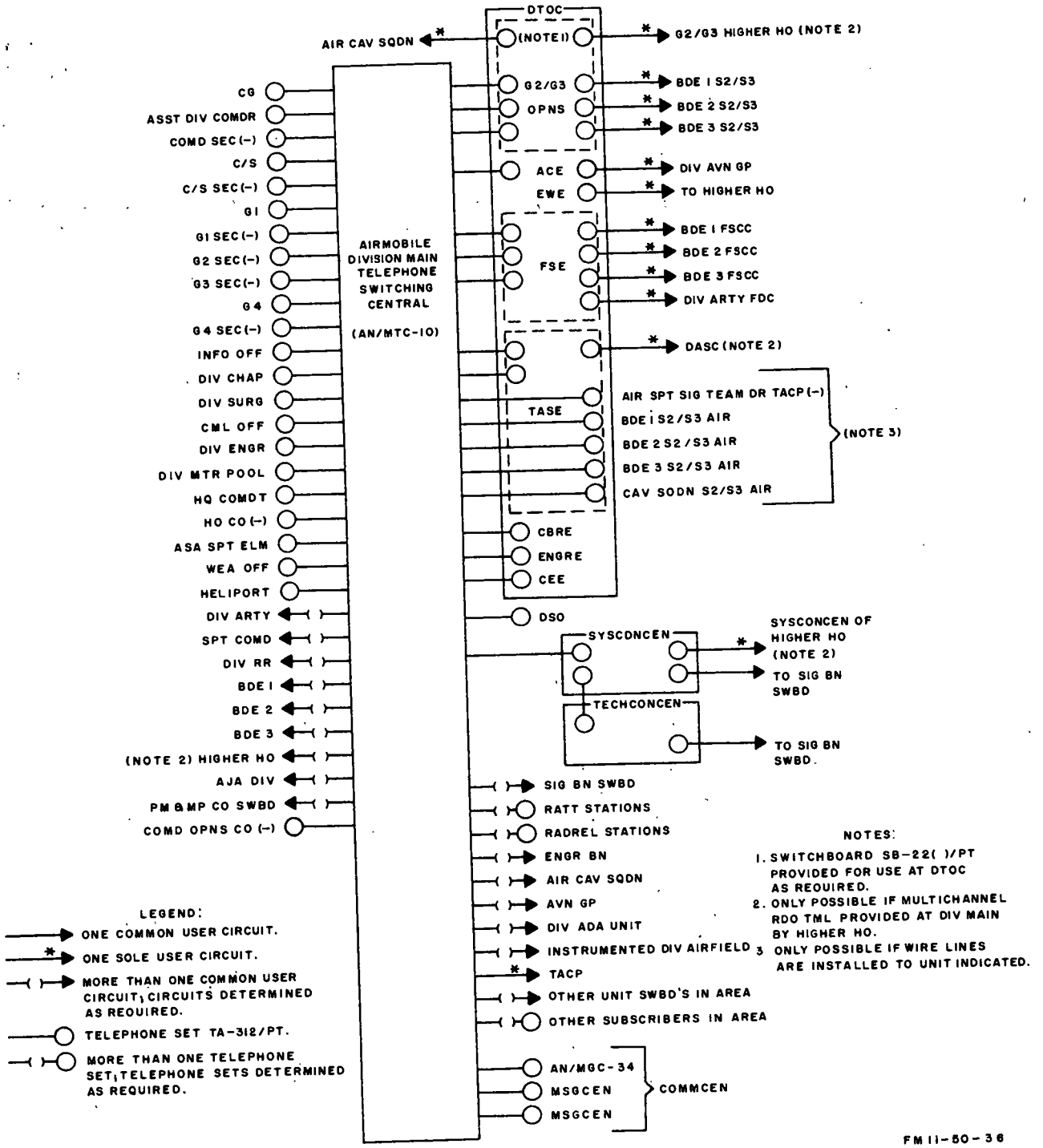


Figure 28–6. Type telephone and circuit distribution diagram for division main signal center.

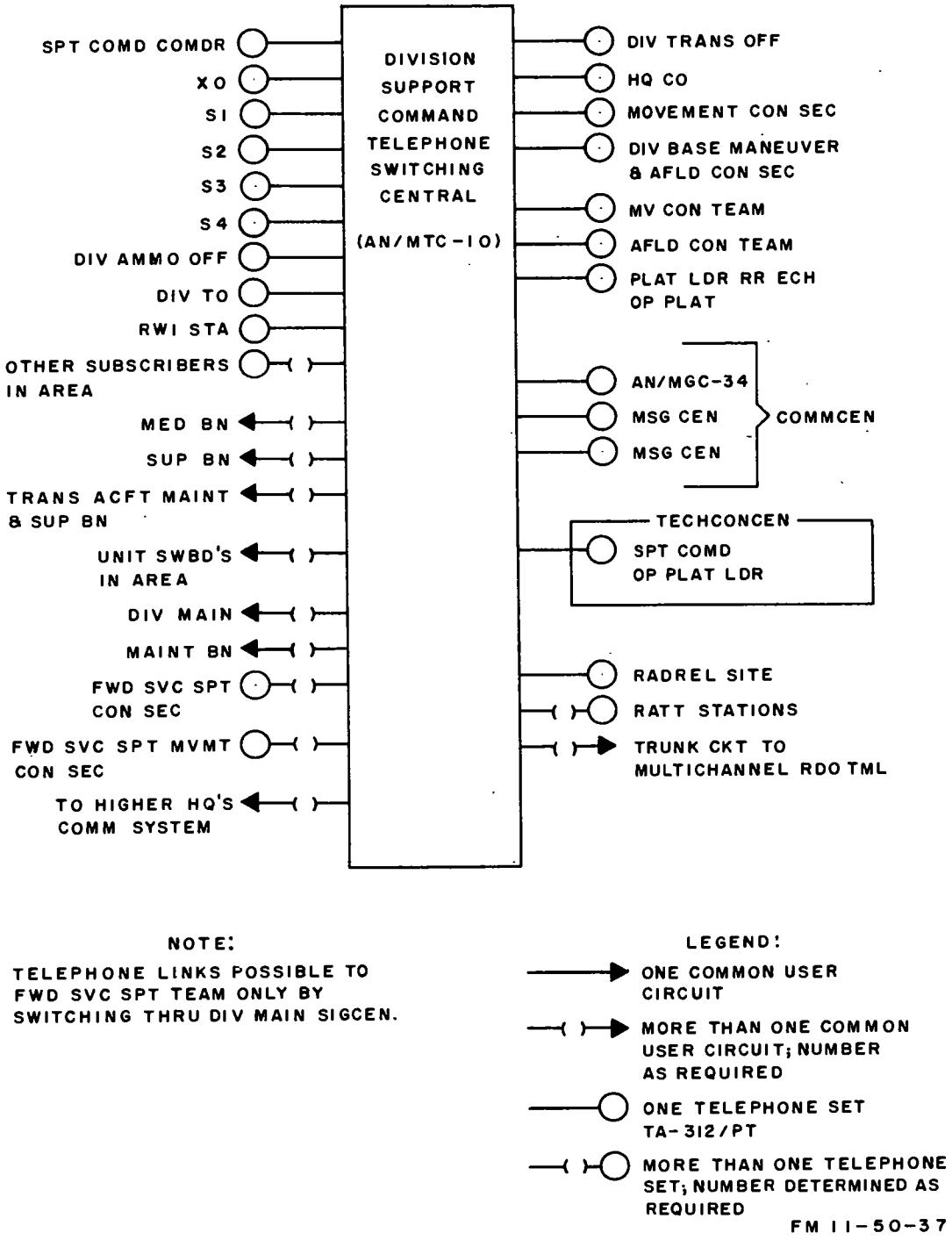
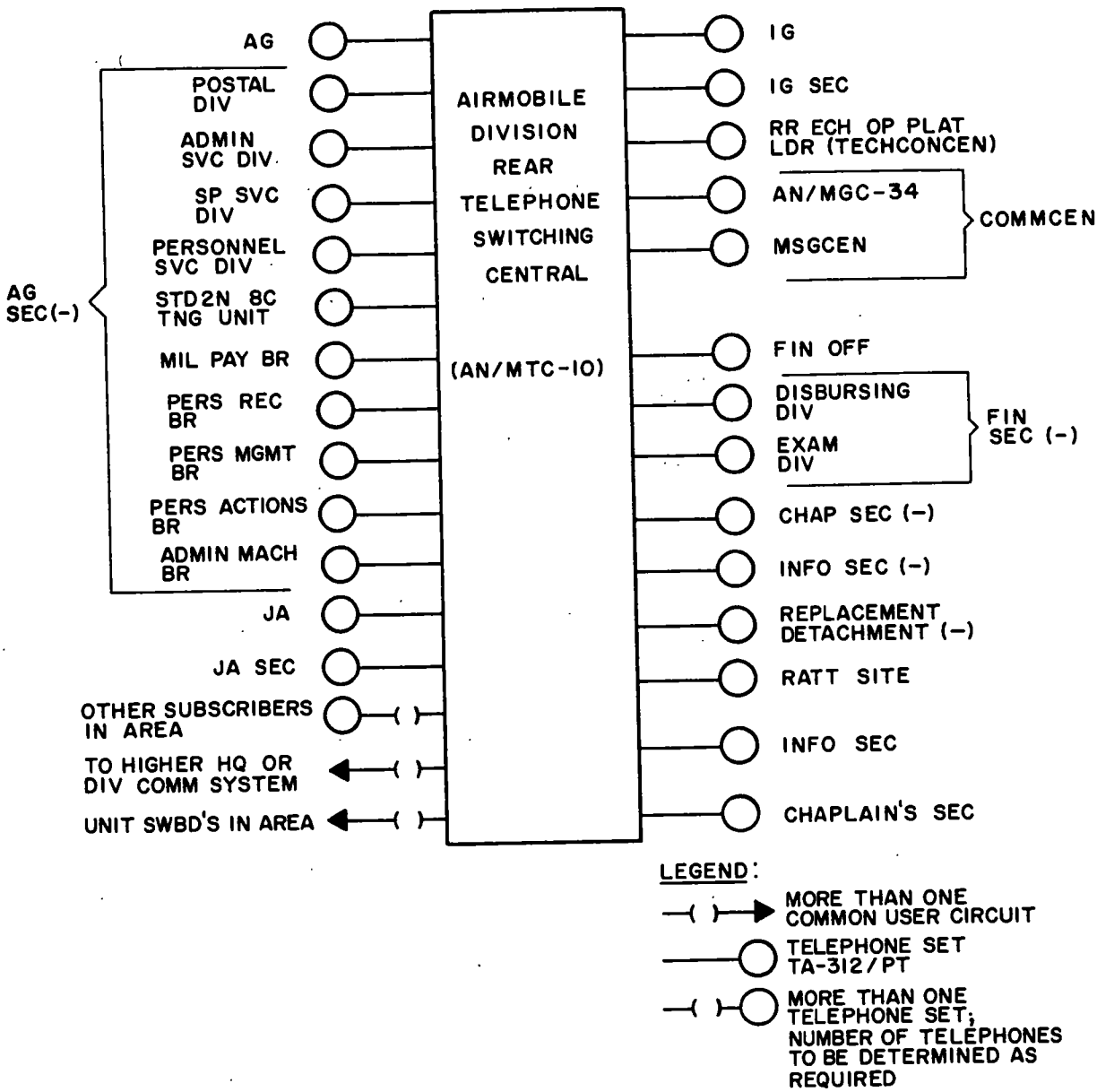


Figure 28–7. Type telephone and circuit distribution diagram for division support command communications center.



FM 11-50-38

Figure 28-8. Type telephone and circuit distribution diagram for division rear echelon communications center.

Section III. INTERNAL SIGNAL BATTALION COMMUNICATIONS

28–17. Internal Signal Battalion Radio Nets

a. A type airmobile division signal battalion FM command radio net is shown in figure 28–9. This net will enable the battalion commander to maintain direct communications with all elements of the battalion. When battalion units are widely scattered and switched telephone service is not immediately available, FM aerial retransmission may be necessary.

b. If frequencies are available, radio stations of the operations and intelligence section (NCS), the rear operations platoon, command signal center platoon, and support command operations platoon may be formulated into a second FM net for systems control purposes.

c. It should also be noted that the battalion commander also operates in the division command operations net (FM), and that the DSO section operates a RATT station in division command net No. 1.

28–18. Signal Battalion Wire Facilities

Type wire facilities for internal control of the airmobile division signal battalion are shown in figure 28–10. These facilities are established at signal battalion headquarters which is normally located in the vicinity of the division main CP.

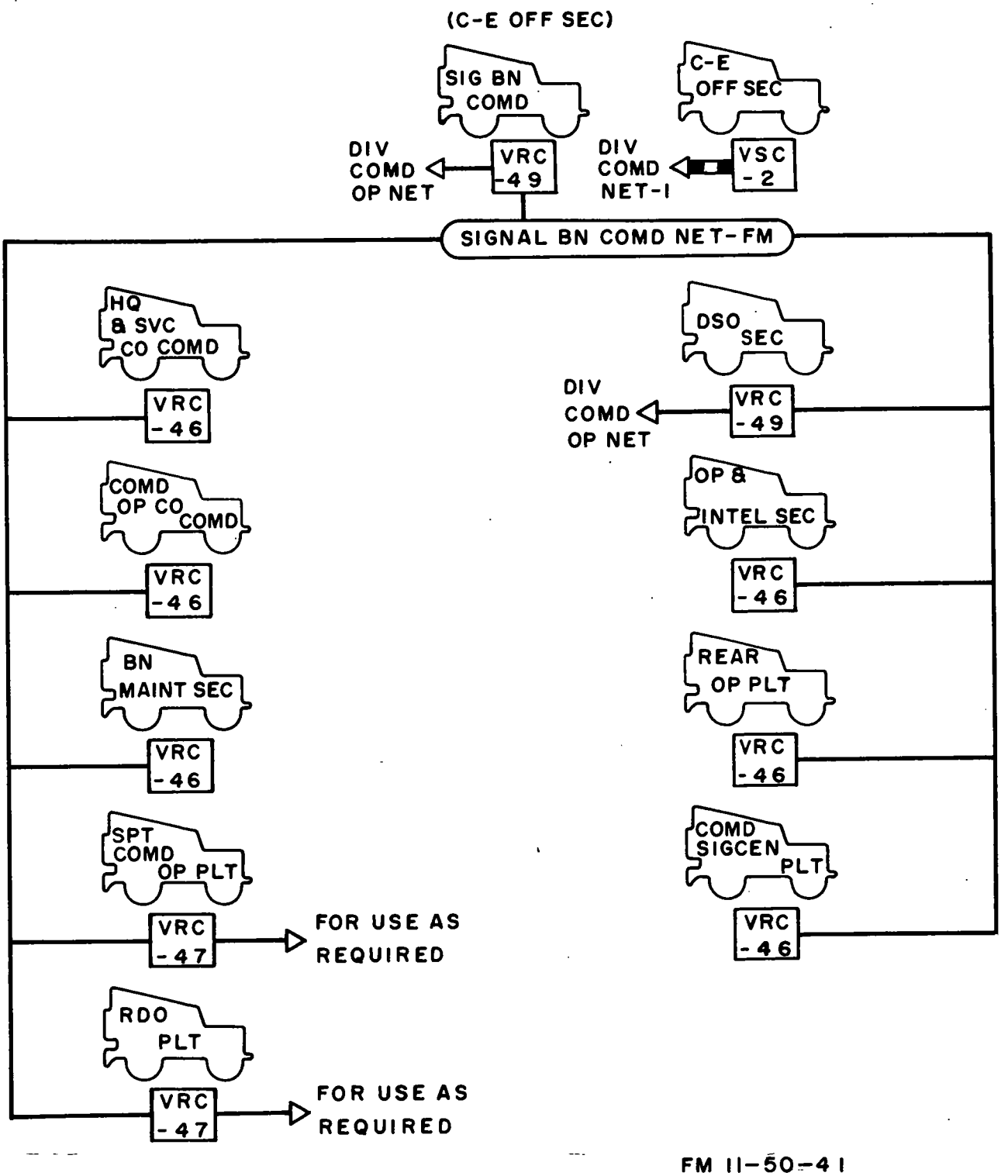
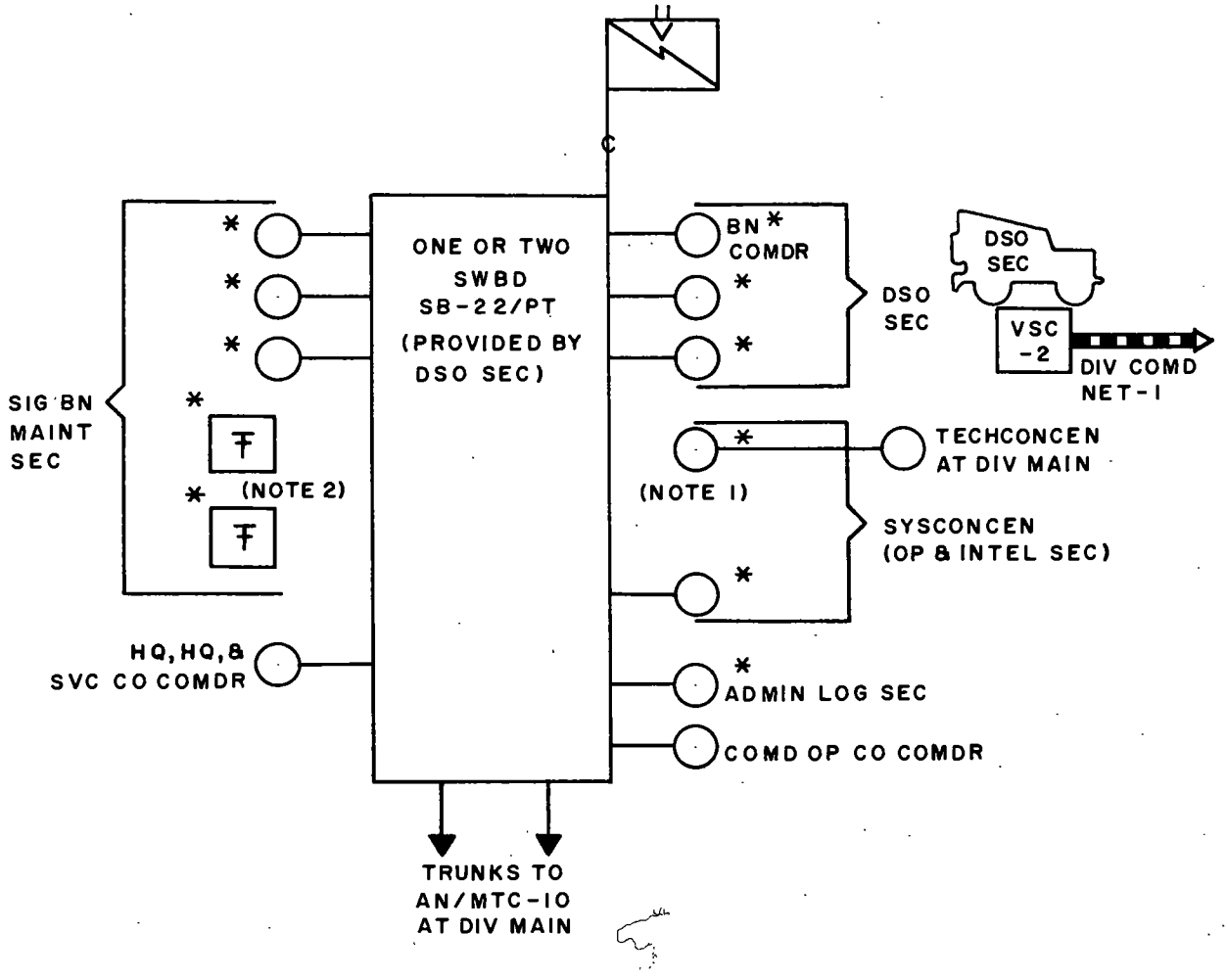


Figure 28–9. Type FM radio net for division signal battalion.



LEGEND:

- ○ TELEPHONE SET TA-312/PT
- ▭ TELETYPEWRITER SET
- —— FIELD WIRE LINK
- * ORGANIC TO HQS, HQS, & SVC COMPANY

NOTES:

1. ONE TA-312/PT PROVIDED BY DSO SECTION.
2. MANUAL TELETYPEWRITER SETS USED FOR CIRCUIT TESTING OR AS REQUIRED.

FM 11-50-40

Figure 28–10. Type internal wire facilities for signal battalion headquarters use.

CHAPTER 29
BRIGADE COMMUNICATIONS
(STANAG 2043)

Section I. GENERAL INFORMATION

29–1. Mission and Organization

a. Mission. The mission of headquarters and headquarters company, airmobile division brigade, is to command and control attached combat and combat support elements in both training and combat operations. General information applicatory to all brigades is given in chapter 7. Also refer to FM 7–30 and TOE 67–42.

b. Organization. The focal point of this discussion will be the brigade headquarters and headquarters company; the number of battalions and other units under brigade control are varied and are tailored on an as-required basis to fit the tactical mission. The brigade headquarters and headquarters company consists of brigade headeuqarters, company headquarters, a staff section, headquarters mess team, communication platoon and aviation platoon. Of the company elements, only the organization of the communications platoon will be addressed in brief detail.

29–2. Airmobile Brigade Capabilities

a. The airmobile brigade possesses capabilities comparable to armored, infantry, mechanized, and airborne brigades. (Refer to FM 7–30 and FM 17–30.) Additionally, the airmobile brigade operates with somewhat reduced logistical support and is organized to conduct frequent airlanded assaults with a minimum of marshaling and special planning procedures. Refer to TOE 67–42 for more complete listing of airmobile brigade capabilities.

b. Communication facilities employed by the airmobile brigade emphasize the use of lightweight, air-transportable communications equipment with emphasis on single channel radio. Communication facilities must be provided on a 24-hour continuous basis at all headquarter echelons whether they be on the ground or in the air.

29–3. Brigade C–E Officer and Other Personnel

The airmobile brigade C–E officer is a member of the brigade special staff. Assisting the C–E officer is the platoon leader of the brigade communications platoon. Typical duties of these officers are discussed in chapter 2; also included in this chapter are duties of key enlisted personnel typical of those assigned to an airmobile brigade communications platoon.

29–4. Airmobile Brigade Communications Platoon

a. The airmobile brigade communications platoon provides communications within brigade headquarters and to attached battalions and other subordinate units. With the exception of the airmobile capability, this platoon performs operations similar to those described in chapter 7.

b. To carry out its mission, the airmobile brigade communications platoon is organized into a platoon headquarters, communications center and wire section, and a radio section.

c. If brigade headquarters is designated to serve as a division alternate CP, suitable additional communication personnel and equipment are provided as required by the division signal battalion.

Section II. BRIGADE RADIO NETS AND WIRE SYSTEM

29–5. Brigade Communications to Higher Headquarters

a. Radio. Listed below are external radio nets in which the divisional airmobile brigade has stations (fig. 29–1).

(1) *Division command-operations net (FM).* The brigade station is provided by the brigade communications platoon. Additional stations may be provided by the brigade communications platoon for use in airborne CPs or as required for brigade operations.

(2) *Division operations-intelligence net (FM).* The ground station at the brigade operations center is provided by the division signal battalion. In addition, the brigade communications platoon has facilities to operate other stations in this net in airborne CPs or as otherwise required.

(3) *Division command nets No. 1 and 2 (RATT).* Brigade headquarters stations in these nets are provided by the division signal battalion. The brigade communications platoon provides two ground portable sets that may operate at a brigade forward CP in these nets only in an AM-SSB voice or CW mode.

(4) *Division administrative-logistics nets No. 1, 2 and 3 (RATT).* Each brigade is in a separate division administrative logistics net. The division signal battalion provides and operates the stations at brigade headquarters and at the forward service support elements of the brigade (for combat service support). If a brigade forward CP is established, the brigade communications platoon will operate one ground portable station operating in an AM-SSB voice or CW mode only.

(5) *Air Force tactical air direction (UHF–AM).* Normally, stations in this net will be provided by the Air Force TACP.

(6) *Air Force air request net (AM–voice).* The stations in this net are provided and operated by the Air Force at the TACP. The net is used for immediate air requests. For detailed explanation, refer to chapter 4.

b. Multichannel Radio. For telephone and teletypewriter communications to division main, the division signal battalion provides and operates a multichannel radio terminal at brigade headquarters. In addition, since forward combat service support elements are usually in the vicinity of the brigade CP, they too will utilize this facility with switching or stop through at division main for linking to division support command. The nature of airmobile operations at the brigade level precludes the use of wire or cable for trunk type communication links.

c. Messenger. Normally, the division signal battalion provides messenger service from division to brigade; however, in some situations, messengers from the brigade communications platoon may be used for special or nonscheduled service to higher headquarters.

d. Visual. For general details, refer to chapter 7.

29–6. Communications to Subordinate Units

The communications platoon of the airmobile division brigade headquarters company provides the command and control communications to attached battalions and supported units.

a. Radio.

(1) *Brigade command net (FM).* This net provides the brigade commander with immediate tactical command and control over subordinate elements of the brigade. Brigade headquarters stations include the commander deputy commander, S2/S3, signal officer, S4, S3 air, aviations platoon, and operations staff section.

(2) *Brigade operations-intelligence net (RATT).* This net provides the capability of transmitting secure traffic between brigade and subordinate headquarters. Although traffic is primarily concerned with operations and intelligence (RATT), it may also be used to transmit traffic of an administrative-logistical nature.

(3) *Brigade aircraft net (FM).* Radio sets organic to the brigade aviation platoon are

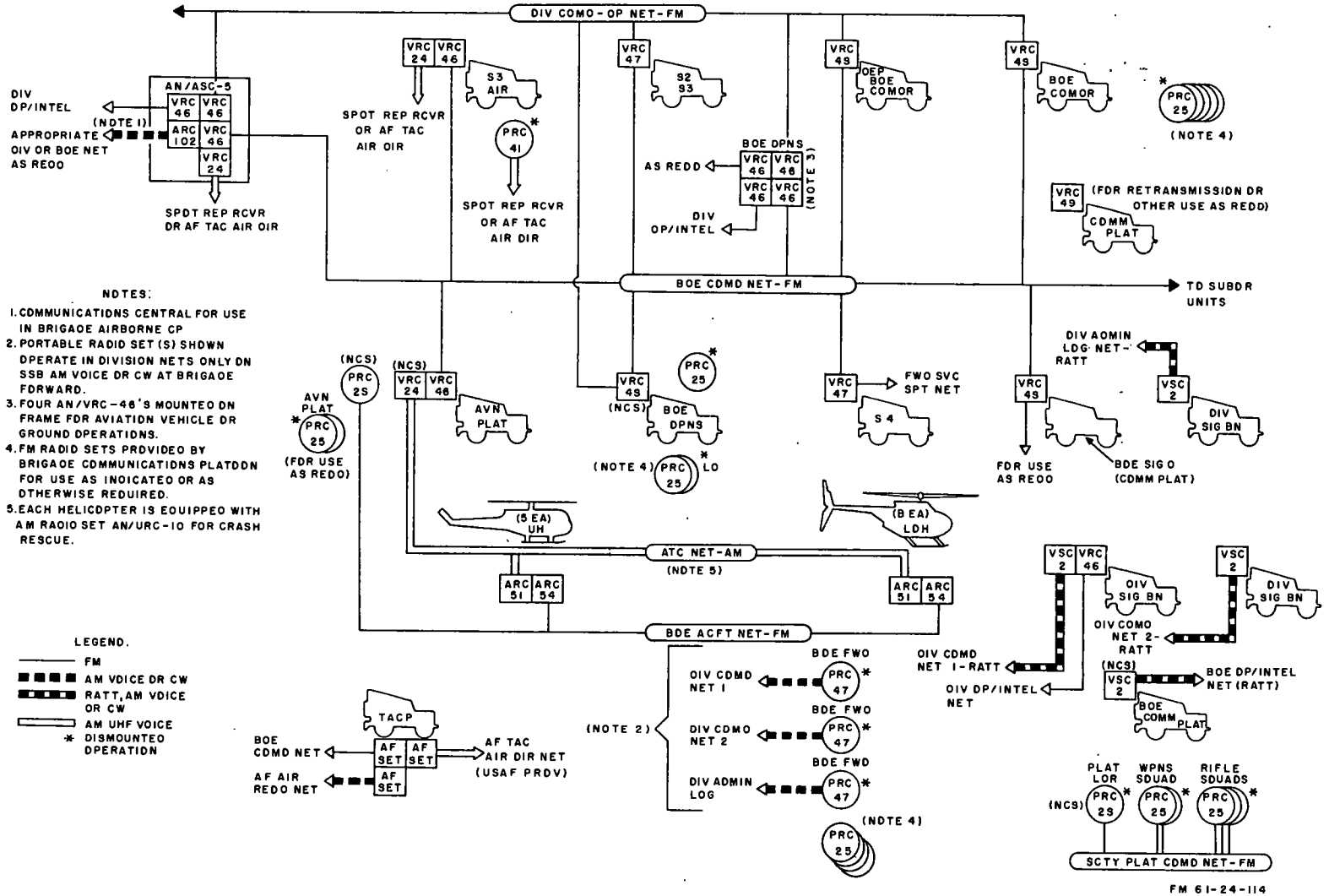


Figure 29–1. Type radio nets, airmobile division brigade.

shown in one net. For further information and the employment of aircraft FM radios, refer to paragraph 18–6.

(4) *Air traffic control net (AM).* Each helicopter of the aviation platoon is netted with a ground control station (NCS) in an air traffic control (ATC) net.

b. Wire.

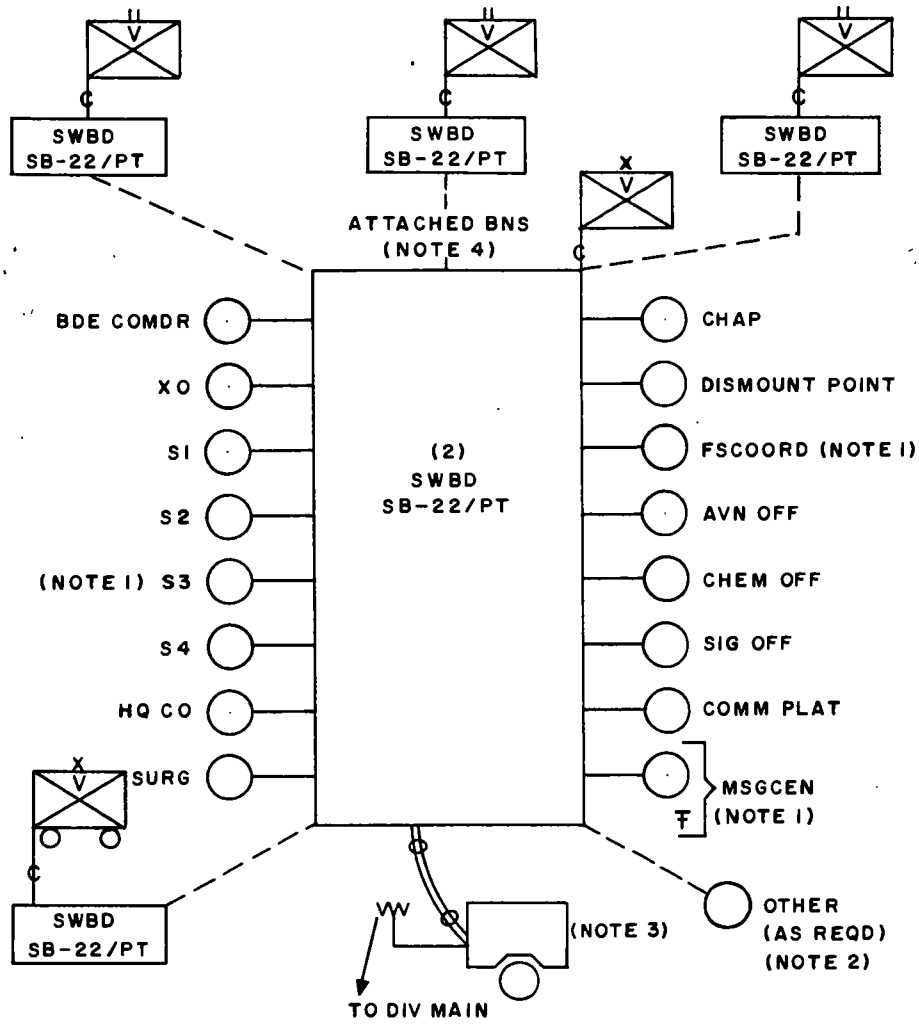
(1) A type wire system installed at brigade headquarters by the communication platoon is shown in figure 29–2. Wire trunks to such major subordinate units as the infantry battalion and brigade trains are rarely installed in airmobile operations. Where feasible, units supported by fire will lay wire to the airmobile brigade headquarters.

(2) In general, the wire system shown parallels the FM radio nets of the brigade.

c. Supplemental Means.

(1) Messengers, both scheduled and special, are provided by the brigade to its attached battalions and other subordinate units. Emphasis will be on air messenger service, with foot and motor messengers confined to shorter and more secure routes.

(2) Where possible, visual and sound communications between brigades and subordinate units are maintained in accordance with operations orders, the SOI, and division policy.



NOTES:

1. SOLE USER CIRCUITS WILL BE ESTABLISHED THROUGH DIVISION MULTICHANNEL RADIO NETWORK.
2. INCLUDES OTHER SUPPORT OR ATTACHED UNITS, RADIO TRUCKS, & AUGMENTATIONS.
3. MULTICHANNEL RADIO TERMINAL PROVIDED BY SIGNAL BATTALION.
4. NUMBER OF ATTACHED BNS MAY VARY.

LEGEND:

- TELEPHONE SET TA-312/PT
- FIELD WIRE
- FIELD WIRE INSTALLED WHEN FEASIBLE
- CABLE
- TELETYPEWRITER FACILITY

FM 61-24-115

Figure 29-2. Type wire system, airmobile division brigade.

CHAPTER 30

AIRMOBILE INFANTRY BATTALION COMMUNICATIONS

(STANAG 2043)

Section I. BATTALION HEADQUARTERS COMMUNICATIONS

30–1. Basic Considerations

a. The mission of the airmobile division infantry battalion is to close with the enemy by means of fire and maneuver in order to destroy or capture him or to repel his assault by fire, close combat, and counterattacks. Basically, the airmobile infantry battalion is organized and equipped to utilize rotary wing aircraft for speedy transportation to advantageous position on the battlefield. To carry out its mission, the battalion is organized into a headquarters and headquarters company, three rifle companies, and a combat support company. For more specific details refer to TOE 7–55. The battalion's combat support company (TOE 7–58) consists of a reconnaissance platoon, mortar platoon, anti-tank platoon, and a Redeye (air defense) section.

b. Battalion headquarters communications are provided by the communications platoon of the battalion headquarters and headquarters company. Each communication platoon provides equipment and personnel to maintain internal headquarters communications and to provide the necessary communications links from battalion headquarters to subordinate units, and from battalion headquarters to the next higher headquarters, such as brigade.

c. For other general information adaptable to communications in the infantry battalion airmobile division, refer to chapters 8 and 9. Chapter 2 lists the typical duties of the battalion communications officer and key enlisted communication specialists of the battalion.

30–2. Airmobile Infantry Battalion Communications to Higher Headquarters

a. Radio. Listed below are external radio nets (fig. 30–1) in which the airmobile infantry battalion maintains stations.

(1) *Brigade command net FM.* The battalion CP stations are provided by the battalion headquarters section and include the battalion commander and operations section. When the battalion CP is heliborne, a radio from a communication central provided by the battalion communications platoon will operate in this net.

(2) *Brigade operations-intelligence net-RATT.* This net provides the capability of voice, CW or secure radio teletypewriter communications between battalion and its controlling brigade headquarters. Although traffic is primarily operations-intelligence, it can also be used for administrative logistical purposes. The battalion station is provided by the communications platoon.

(3) *Division air request net (AM voice).* This net is used for transmitting preplanned air request information. If TACP's are unequipped, the battalion station may be diverted to an AF air request net to transmit immediate air requests. The battalion station is provided by the communications platoon.

b. Wire Communications. When possible, the brigade communications platoon may install wire trunks to the battalion headquarters switchboard. In airmobile operations, however,

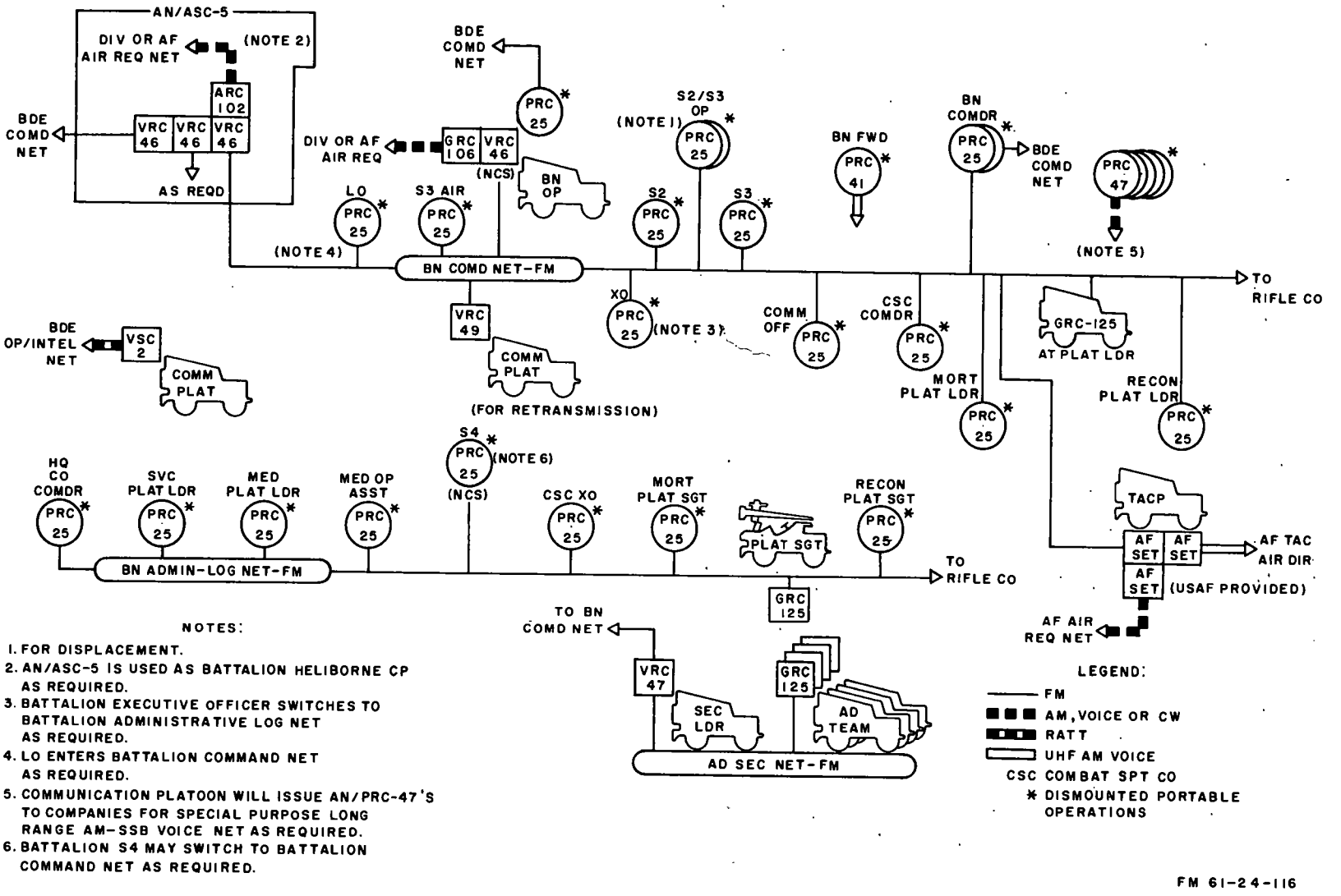


Figure 30–1. Type radio nets, headquarters and headquarters company, airmobile infantry battalion.

this is unfeasible in most situations. Usually, reliance on tactical wire trunks to brigade or higher headquarters must be discounted, and reliance must be placed on existing single channel radio communications.

c. Messenger. Brigade headquarters provides messenger service to the airmobile battalion, mostly by air, on a special and sometimes scheduled basis. Where essential, battalion may dispatch special messengers to brigade headquarters.

30–3. Airmobile Infantry Battalion Communications to Subordinate Units

Communications from airmobile infantry battalion headquarters to subordinate units are summarized below:

a. Radio. FM radio sets employed in the airmobile infantry battalion (fig. 30–1) are, for the most part, of the dismounted portable type. Type radio nets for the battalion follow.

(1) *Battalion command net (FM).* This is a commander-to-commander net from battalion to company level. Also operating in this net are battalion staff members, commanders of supporting unit, and other officers as designated. NCS at battalion operations is provided by the communications platoon.

(2) *Battalion administrative-logistics net (FM).* This radio net is used for the function indicated with NCS normally designated at the S4's portable radio set. For additional information adaptable to the airmobile infantry battalion, refer to paragraph 19–4*a*(2).

b. Wire. The airmobile infantry battalion wire system (fig. 30–2) parallels the radio nets already discussed. Wire trunks to the combat support company, the rifle companies, and supporting units are laid when time and the tactical situation permit.

c. Other Means of Communication. Battalion headquarters maintains messenger service to its organic companies and attached and supporting units. Visual and other methods of signaling are also used where practicable.

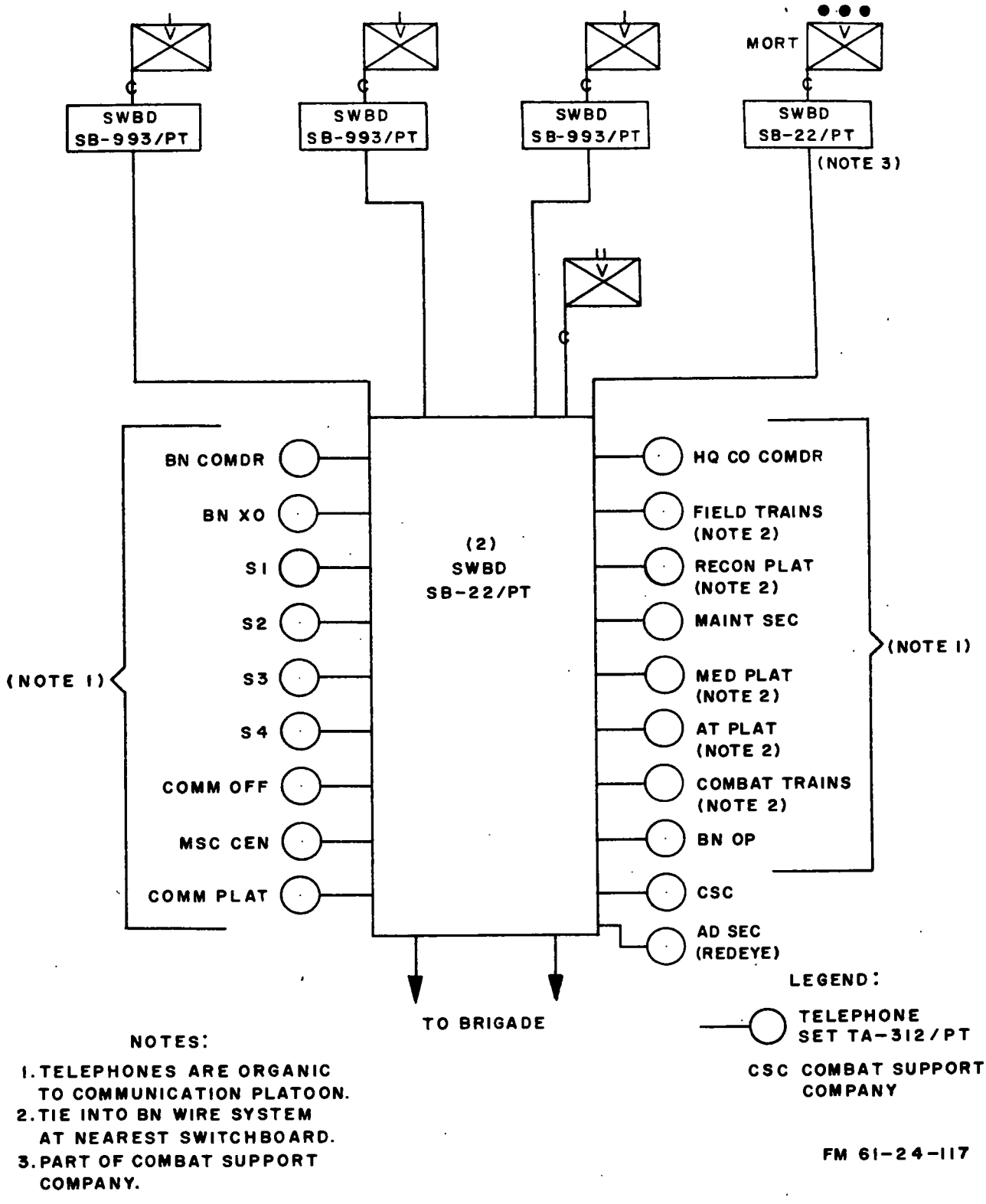


Figure 30-2. Type wire system, infantry battalion, airmobile division.

Section II. COMMUNICATIONS, COMBAT SUPPORT COMPANY, AIRMOBILE INFANTRY BATTALION

30–4. General

a. The combat support company of the airmobile infantry battalion has the mission to provide the battalion with reconnaissance, indirect fire support (81 mm mortar), antitank support, and limited air defense.

b. The company is organized into a company headquarters, reconnaissance platoon, mortar platoon, antitank platoon, and Redeye section. For further details on the combat support company, refer to TOE 7–58.

c. The company CP of the combat support company is normally established in the vicinity of battalion headquarters.

30–5. Company Communications to Higher Headquarters

a. Radio. The combat support company normally maintains radio stations in the following battalion nets (fig. 30–3).

(1) *Battalion command net (FM).* The company commander and the platoon leaders of the antitank, reconnaissance, and mortar platoons operate in this net.

(2) *Battalion administrative-logistics net (FM).* The company executive officer and the platoon sergeants of the antitank, reconnaissance, mortar platoons and Redeye section operate in this net.

b. Wire. Normally, the battalion communications platoon will extend a wire trunk to the mortar platoon of the combat support company. The company commander combat support company, usually has a telephone off the battalion switchboard; the antitank and reconnaissance platoon leaders either have telephone links directly to the battalion switchboard or they tie into the battalion wire system at the nearest switchboard of one of the other companies. (As previously mentioned, the combat support company CP is generally in the near vicinity of the battalion CP.) Refer to figure 30–2.

30–6. Internal Combat Support Company Communications

a. Radio. Normally, the combat support company does not maintain an internal company command radio net. The company commander, mortar platoon leader, antitank platoon leader, and reconnaissance platoon leader operate stations in the battalion command net; the company executive officer and the platoon sergeants of the mortar, antitanks, and reconnaissance platoons switch radio stations to the battalion administrative logistics net as required. Refer to figure 30–1. Platoon radio nets of the combat support company are identified below.

(1) *Battalion mortar platoon command net–FM.* This is an FM voice fire direction net with stations as illustrated in figure 30–3. Note that the mortar fire direction center maintains separate voice radio contact with the direct support artillery units.

(2) *Reconnaissance platoon command net–FM.* Refer to figure 30–3. Note that the platoon leader and the platoon sergeant may switch from this net to the battalion command or battalion administration logistics net, as required.

(3) *Antitank platoon command net–FM.* This net (fig. 30–3) is used by the platoon leader for command, control, and coordination of platoon operations. Note that the platoon leader and the platoon sergeant may operate in the battalion command net and the battalion administration logistics net, as required.

b. Wire. As previously indicated, the combat support company commander normally is tied into the battalion switchboard; the reconnaissance and antitanks platoon leaders may be tied into the battalion switchboard or be connected to the nearest rifle company switchboard available (fig. 30–2). The mortar platoon, however, operates an internal telephone switching system primarily for fire direction purposes (fig. 30–4). In addition, the mortar platoon is normally connected by wire to the infantry battalion switchboard and to direct support artillery battalion.

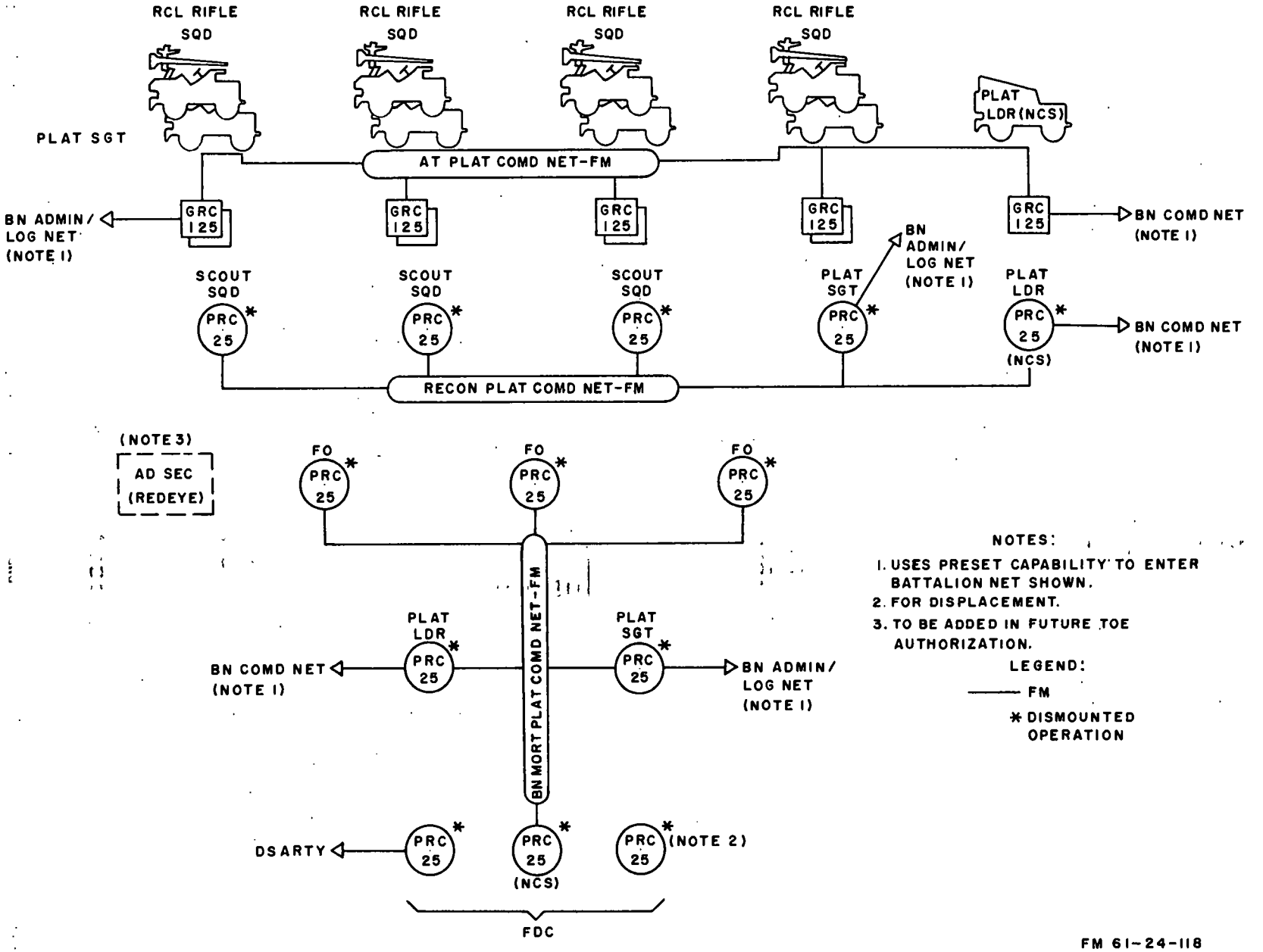


Figure 30-3. Type radio nets, combat support company, infantry battalion.

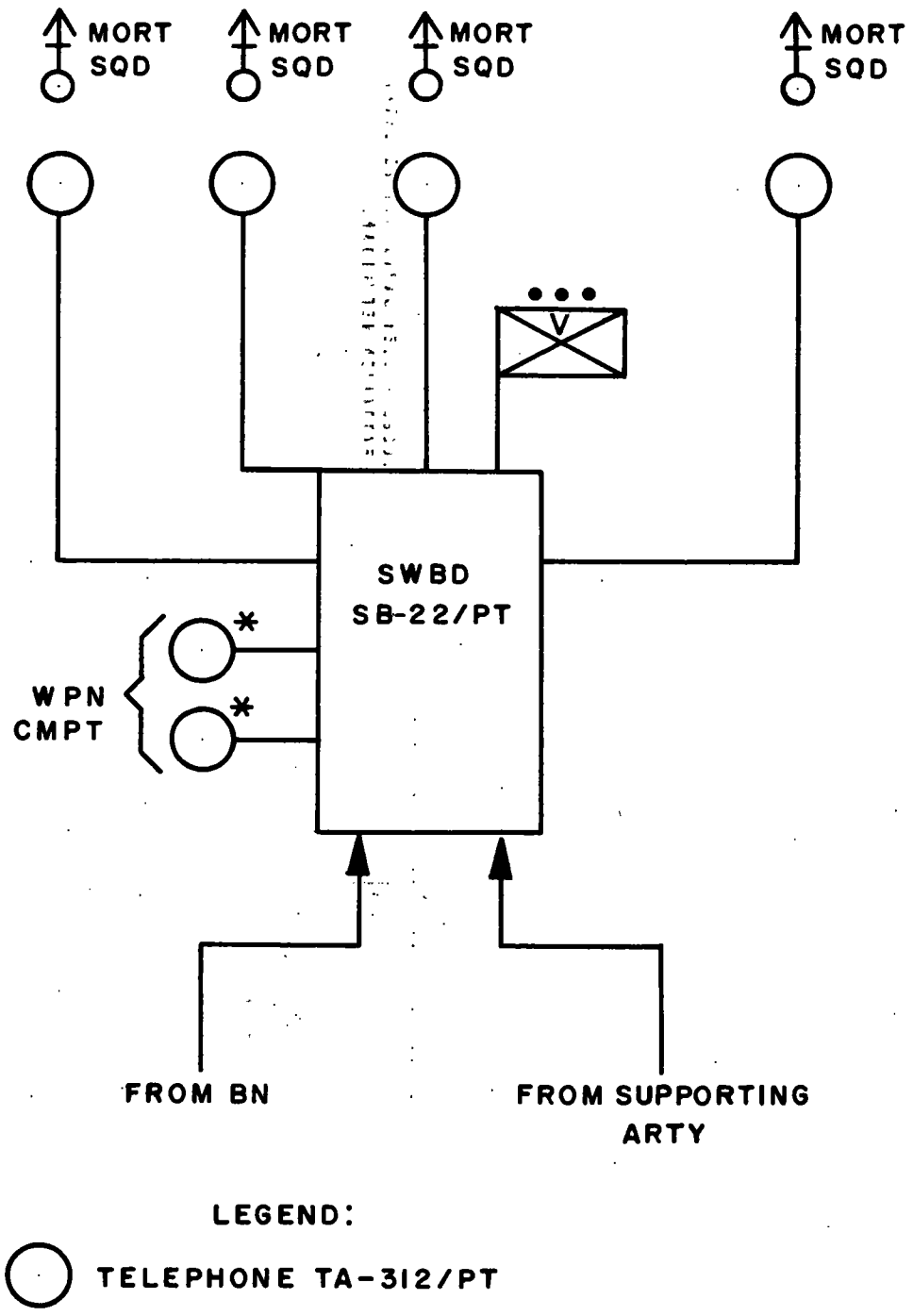


Figure 30-4. Type mortar platoon wire system, combat support company, infantry battalion, airmobile division.

Section III. COMMUNICATIONS, RIFLE COMPANY, INFANTRY BATTALION

30–7. Company Communications to Higher Headquarters

a. Radio. The airmobile rifle company CP maintains radio stations in the following battalion nets (fig. 30–5).

(1) *Battalion command net FM* with a radio station for the company commander.

(2) *Battalion administrative and logistics net–FM* which the company executive officer may enter as required.

b. Wire. Where possible, the battalion communications platoon will extend field wire trunks to each of the rifle company switchboards (fig. 30–6).

30–8. Internal Rifle Company Communications

a. Radio (fig. 30–5).

(1) *Rifle company command net (FM).* This net is primarily intended for tactical communications from the company commander to his platoon leaders; also included are all attached and supporting units. When necessary, the net may be secondarily used for company administration and logistics. NCS is at the company CP.

(2) *Rifle platoon command net (FM).* The three rifle platoons each maintain a radio net from command and control of internal operations. NCS is at the platoon CP.

(3) *Company fire direction net–FM.* The mortar platoon maintains this radio net for the purpose indicated. NCS is at the FDC.

b. Wire and Other Communications Means (fig. 30–6).

(1) The wire system of an airmobile rifle company parallels the radio nets already discussed. Where time and the tactical situation permit, field wire lines are laid from company to platoon, and in rare cases from platoon to squad. Both battery and sound-powered telephones are employed.

(2) Messengers, visual, and sound signaling are employed in accordance with SOP's and operations orders.

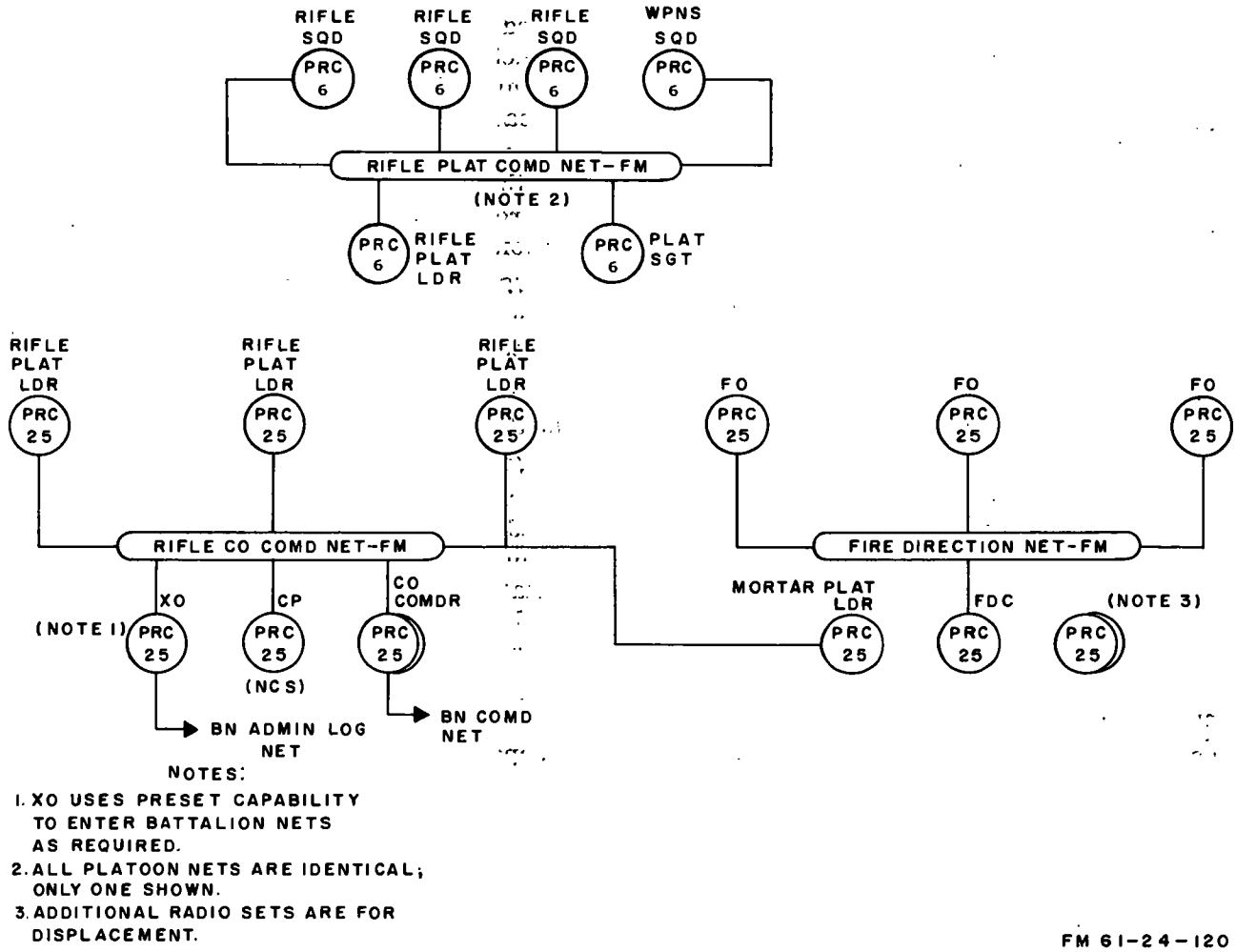


Figure 30–5. Type radio nets, rifle company, infantry battalion.

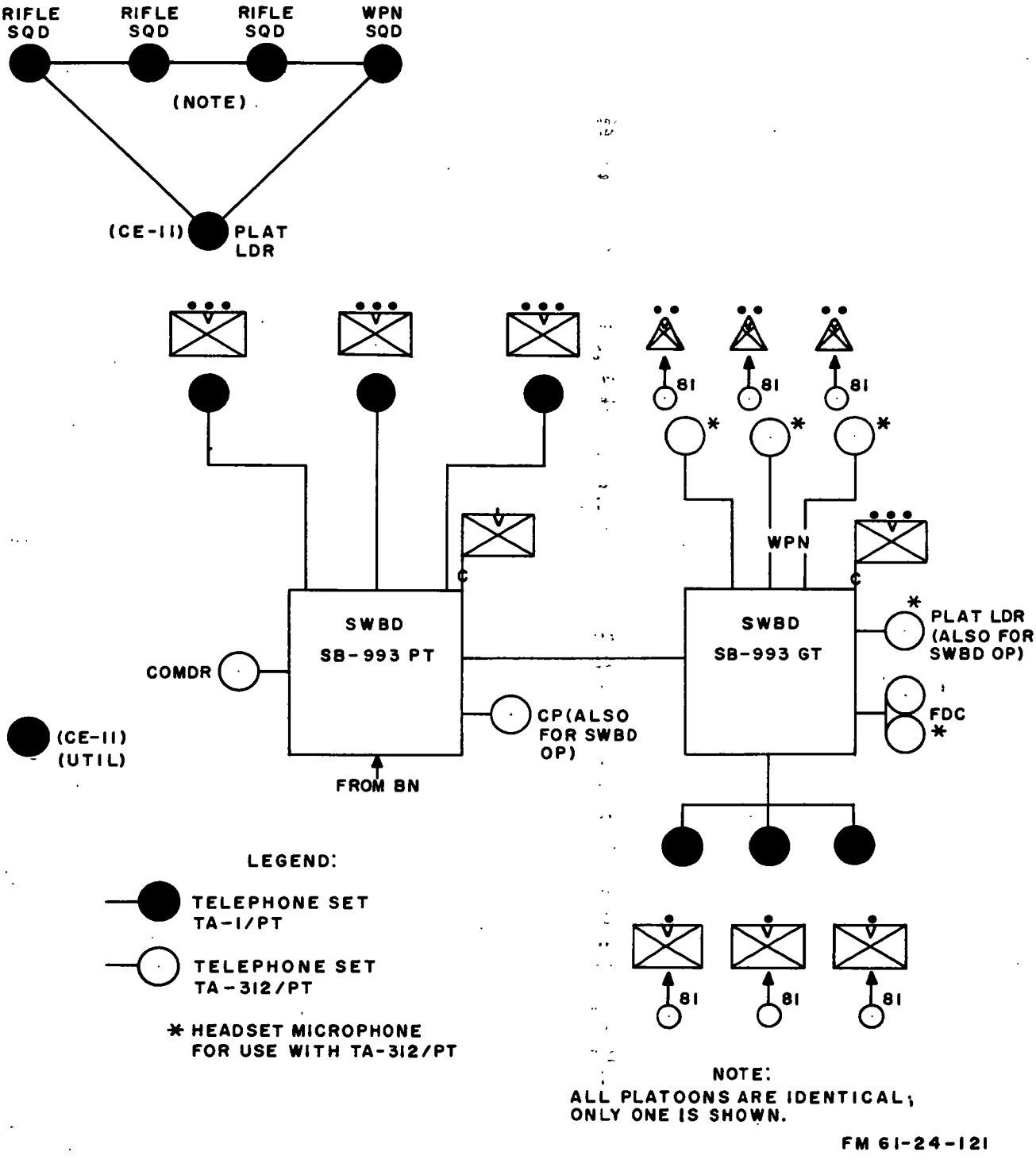


Figure 30–6. Type wire system, rifle company, infantry battalion.

CHAPTER 31
COMMUNICATIONS IN THE CAVALRY SQUADRON
(STANAG 2043)

Section I. SQUADRON HEADQUARTERS COMMUNICATIONS

31–1. Basic Considerations

a. The communication system of the cavalry squadron, airmobile division is similar to the system of the armored cavalry squadrons of the airborne divisions or armored, infantry, and mechanized divisions previously discussed (chap 9 and 20). Radio is the primary means of communication within the cavalry squadron and to higher headquarters because of its inherent speed and flexibility. However, the increased vulnerability to signal intelligence requires that greater communications security procedures be followed. The cavalry squadron, airmobile division is unlike the squadrons of other divisions in that it has three air cavalry troops and only one ground troop. Therefore, most of the communications equipment is helicopter mounted, light in weight, and otherwise adapted to airmobile operations. Communications within the squadron and from the squadron headquarters to organic troops are provided jointly by the squadron headquarters section and the squadron communication platoon. Operations and organization of the communication platoon are very similar to those discussed in paragraphs 2–2 and 9–1 for the armored cavalry squadron of ground divisions.

b. To carry out its mission, the squadron is organized into a headquarters and headquarters troop, three air cavalry troops, and a cavalry troop. For further details, refer to FM 17–36, FM 17–37, and TOE 17–95, 17–96, 17–98, and 17–99.

31–2. Squadron C–E Staff Officer and Other Communication Personnel

The squadron C–E officer serves on the battalion special staff and generally performs duties as listed in paragraph 2–6. Refer to paragraphs 2–7 and 2–8 for description of typical duties of key enlisted specialists of the platoon.

31–3. Cavalry Squadron, Airmobile Division, Communication to Higher Headquarters

a. Radio. Headquarters of the cavalry squadron, airmobile division, operates stations in the following higher headquarters net (fig. 31–1). Refer to paragraph 28–11.

(1) Division command-operations net (FM).

(2) Division operation-intelligence net (FM).

(3) Division command net No. 1 (RATT).

(4) Division command net No. 2 (RATT).

(5) Division administrative-logistics net No. 4 (RATT).

(6) AF request net (AM). The squadron station is provided by the TACP. This radio net is used for immediate air requests (see chap IV).

(7) AF tactical air direction (UHF). The squadron station is provided by the TACP. This voice net is used by the FAC to direct air request mission being flown in support of the squadron (chap 4).

b. Wire. In a stabilized situation, the cavalry squadron headquarters may be linked by field wire into an accessible division signal center and thus obtain entry into the division multichannel radio network. The division signal battalion may provide a multichannel radio

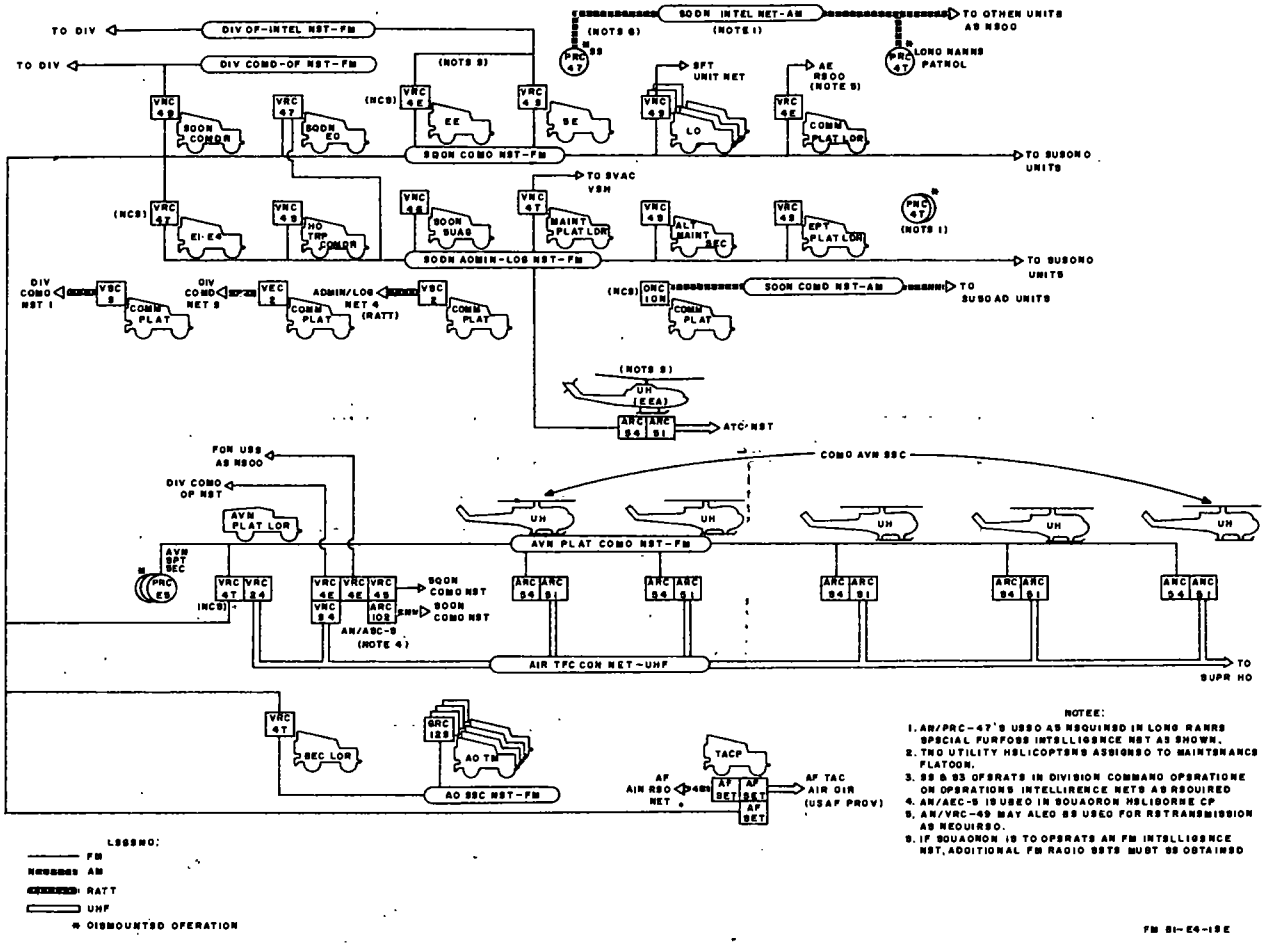


Figure 31–1. Type radio nets, headquarters and headquarters troop.

terminal at squadron headquarters for telephone service.

c. Messenger. Messenger service from division to squadron headquarters is normally provided by the division signal battalion. Liaison officers are used as couriers to convey information between the headquarters as an integral part of the communication system.

31–4. Cavalry Squadron, Airmobile Division Communications to Subordinate Units
(fig. 31–1)

a. Radio. The cavalry squadron operates AM–SSB and FM radio nets for communications with organic, attached, and supporting units. The radio nets employed by the squadron are:

(1) *Squadron command net (AM).* This net links the squadron command post with the command posts of organic troops.

(2) *Squadron command net (FM).* This net links the squadron commander, ground or airmobile, with his staff officers and troop commanders, ground or airmobile.

(3) *Squadron intelligence net (AM).* This net links the S2 with patrols, organic troops, and attached units as required. Portable AM-SSB radio sets are used in this net.

(4) *Red-eye section net (FM).* This net links the various air defense teams with the

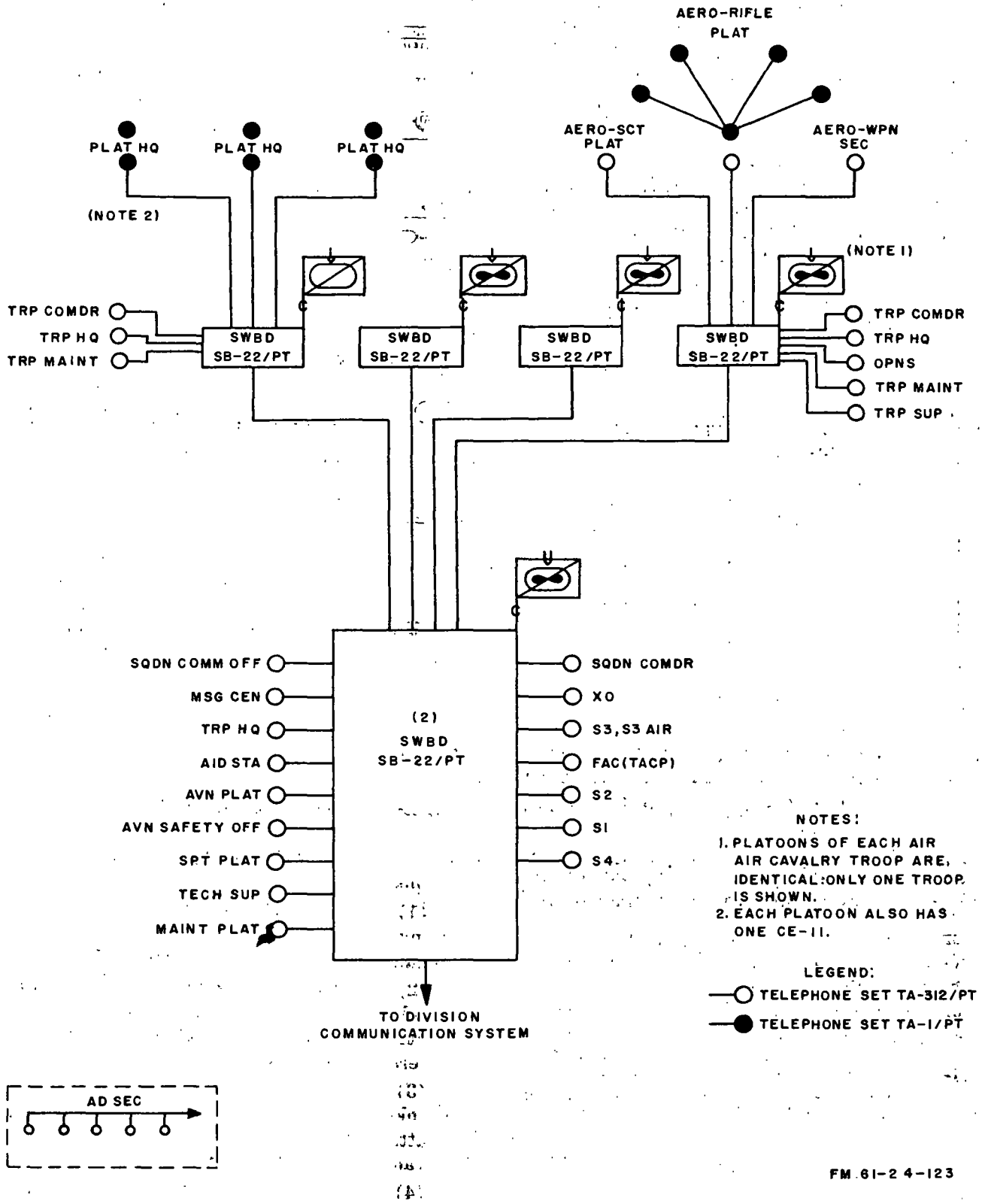


Figure 31-2. Type wire system cavalry squadron.

section leader. The section leader also operates in the squadron command net (FM) as required.

(5) *Squadron administrative—logistics net (FM)*. This net links the S4 with the troop executive officers for administration and supply traffic.

b. Wire. Because of the widely dispersed operations of the squadron, a squadron wire system is seldom employed. The squadron communication platoon will lay wire to troops during periods of radio silence or when all elements of the squadron are in a stabilized situation. A type squadron wire system is shown in figure 31–2. Internal wire facilities within the squadron command post are provided by the squadron communication platoon.

c. Visual Communications. Visual communications have a special importance to the cavalry squadron because of the extended cavalry missions performed in support of airmobile operations. Extensive use is made of arm and hand signals, pyrotechnics, and panels which are used for marking friendly and enemy positions, vehicles, and front lines.

d. Messenger Service. Both ground and air messenger service is provided from the squadron headquarters to subordinate units. Messenger service is provided on a regular scheduled and special basis.

e. Airborne CP. A helicopter provided by the command aviation section may be used as required for an airborne squadron CP. The section also provides a communications central for voice radio communications in this airborne headquarters. (Refer to fig. 31–1.)

Section II. COMMUNICATION OF THE AIR CAVALRY TROOP

31–5. General

a. Each of the three air cavalry troops is a combat force with combat elements mounted in armed helicopters. Primarily the mission of the troop is to perform reconnaissance and security for the squadron, or other units to which attached; to engage in combat as an economy of force unit; and to provide limited antitank defense for elements of the division. Because of this versatility, the air cavalry troop requires radio communications that will provide air-to-air, ground-to-air, air-to-ground, and ground-to-ground communications.

b. Communications personnel authorized to the air cavalry troop include the communication chief, radio mechanics, and radio operators. In addition, helicopter crew personnel are trained in the operation of helicopter mounted AM and FM radio sets.

31–6. Air Cavalry Troop Communications to Higher Headquarters

a. Radio. The air cavalry troop operates ground stations, air stations, or both in the following higher headquarters radio nets (fig. 31–3).

(1) Squadron command net—AM (ground station).

(2) Squadron command net—FM (ground and air stations).

(3) Squadron administrative—logistics net—FM (ground station).

(4) Squadron intelligence net—AM (if required).

b. Wire and Messenger Service. Wire trunks are provided by the squadron communication platoon, or telephone service may be obtainable from the multichannel facilities of the division communication system. Messenger service from the cavalry squadron to the air cavalry troops will be either by ground messenger provided by the squadron communication platoon or by air messenger provided by the squadron aviation platoon.

31–7. Air Cavalry Troop Internal Communication

a. Radio. FM radio nets (fig. 31–3) are the primary communication means utilized for internal command and coordination of troop operations. Type radio nets of the air cavalry troop are listed below.

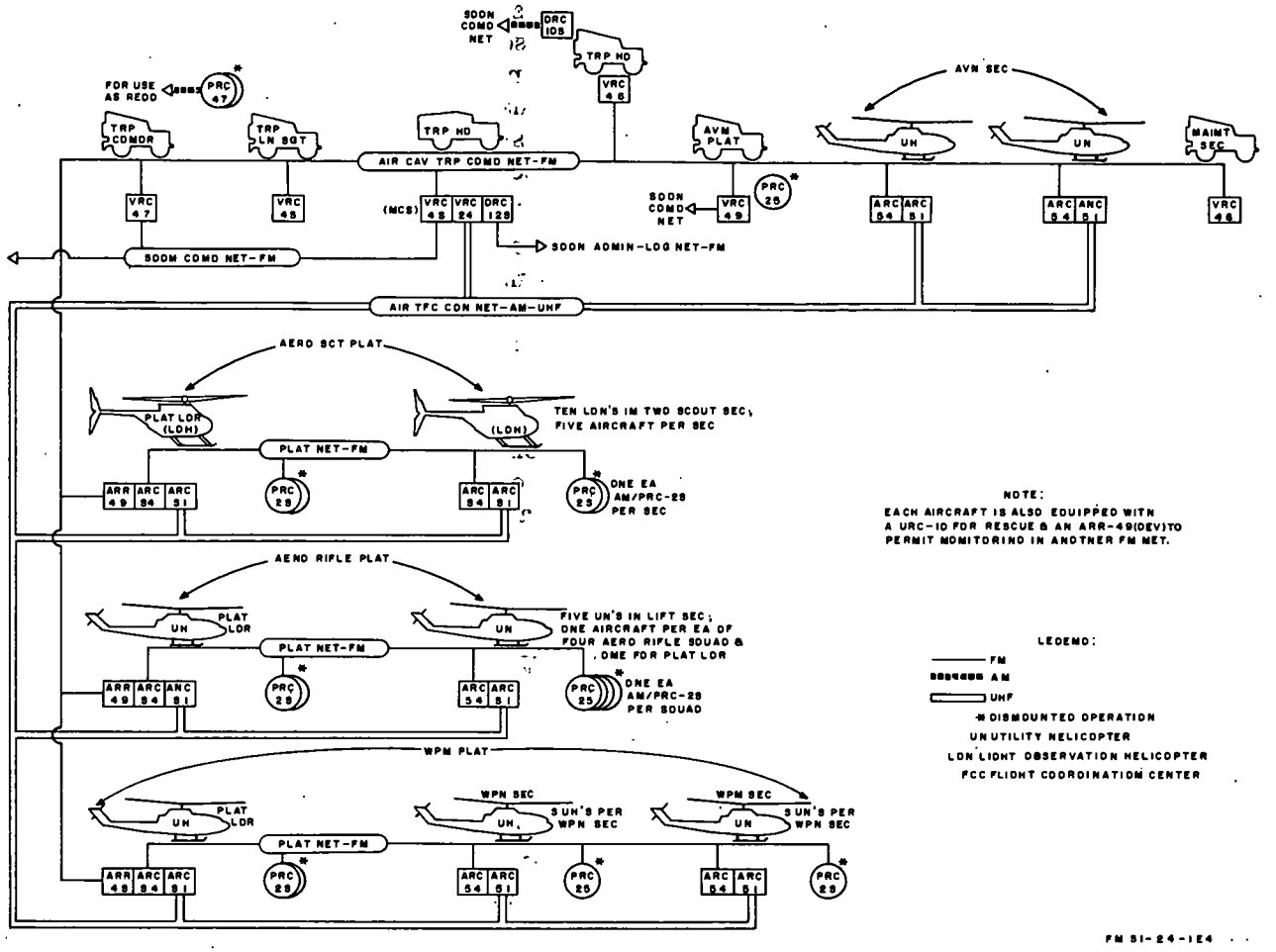


Figure 31–3. Type radio nets, air cavalry troop, cavalry squadron.

(1) *Troop command net (FM).* Stations in this net include the troop commander, CP station, flight operations center, all platoon leaders, liaison sergeant, maintenance section, and platoon helicopters if required.

(2) *Air traffic control net (AM).* Stations in this AM UHF voice net include all troop helicopters, the control tower, and CP station of the troop.

(3) *Platoon command nets (FM).* The scout, rifle and weapons platoons operate platoon command nets for command, control and coordination during tactical operations.

(4) *Platoon command nets (UHF).*

(*a*) The scout and weapons platoons use these nets for command anc control when their FM radios are committed to maintain continuous communications with supported ground elements.

(*b*) The aerorifle platoon lift section uses a platoon command net (UHF) for command and control when the rifle squads are engaged in ground operations.

(5) *Ground stations (FM and AM).*

(*a*) Portable FM radio sets are authorized for the troop operations section, each platoon leader, and each rifle squad for use as required to accomplish their mission.

(*b*) Portable AM radio sets are authorized two per air cavalry troop headquarters for use by long range patrols, forward command groups, and as required to enter AM nets

of adjacent or supporting units or nets of higher headquarters. The stations may also be used in the squadron intelligence net if required. (Refer to fig. 31–1)

b. Wire. The air cavalry troop is authorized sufficient personnel, wire, and telephone equipment to install and operate an air cavalry troop wire net. See figure 31–2 for a type air cavalry troop wire net.

Section III. COMMUNICATIONS OF THE CAVALRY TROOP

31–8. General

The mission of the cavalry troop of the airmobile division cavalry squadron is similar to that of the armored cavalry troop of the armored, infantry and mechanized divisions. The cavalry troop is organized and equipped to perform reconnaissance, provide security, and engage in offensive, defensive, and delaying actions as an economy of force unit. It is employed on missions that complement the squadron mission or mission of the unit to which attached. Because of the mobility inherent in the cavalry troop, FM radio constitutes the primary means of communincation. See FM 17–36 and FM 17–37 for further detail.

31–9. Airmobile Cavalry Troop Communication to Higher Headquarters

a. Radio. The cavalry troop operates radio stations in the following higher headquarters nets (fig. 31–4).

(1) Squadron command net—AM.

(2) Squadron command net—FM.

(3) Squadron administrative—logistics net—FM.

(4) Squadron intelligence net—AM (if required).

b. Wire and Messenger Service. Wire lines (fig. 31–2) and messenger service from higher headquarters are provided by the squadron communication platoon.

31–10. Airmobile Cavalry Troop Internal Communications

a. Radio. The cavalry troop operates the following FM radio nets (fig. 31–4) for internal communication with troop elements:

(1) *Troop command net—FM.* This net is used for command and control of the three cavalry platoons. In addition, this net is used for troop administrative and logistical purposes.

(2) *Platoon command nets—FM.* Each platoon operates a command net for command and control of the platoon.

b. Wire. The cavalry troop installs and operates a troop wire net when time and the tactical situation permit. See figure 31–2 for a typical cavalry troop, airmobile division wire net.

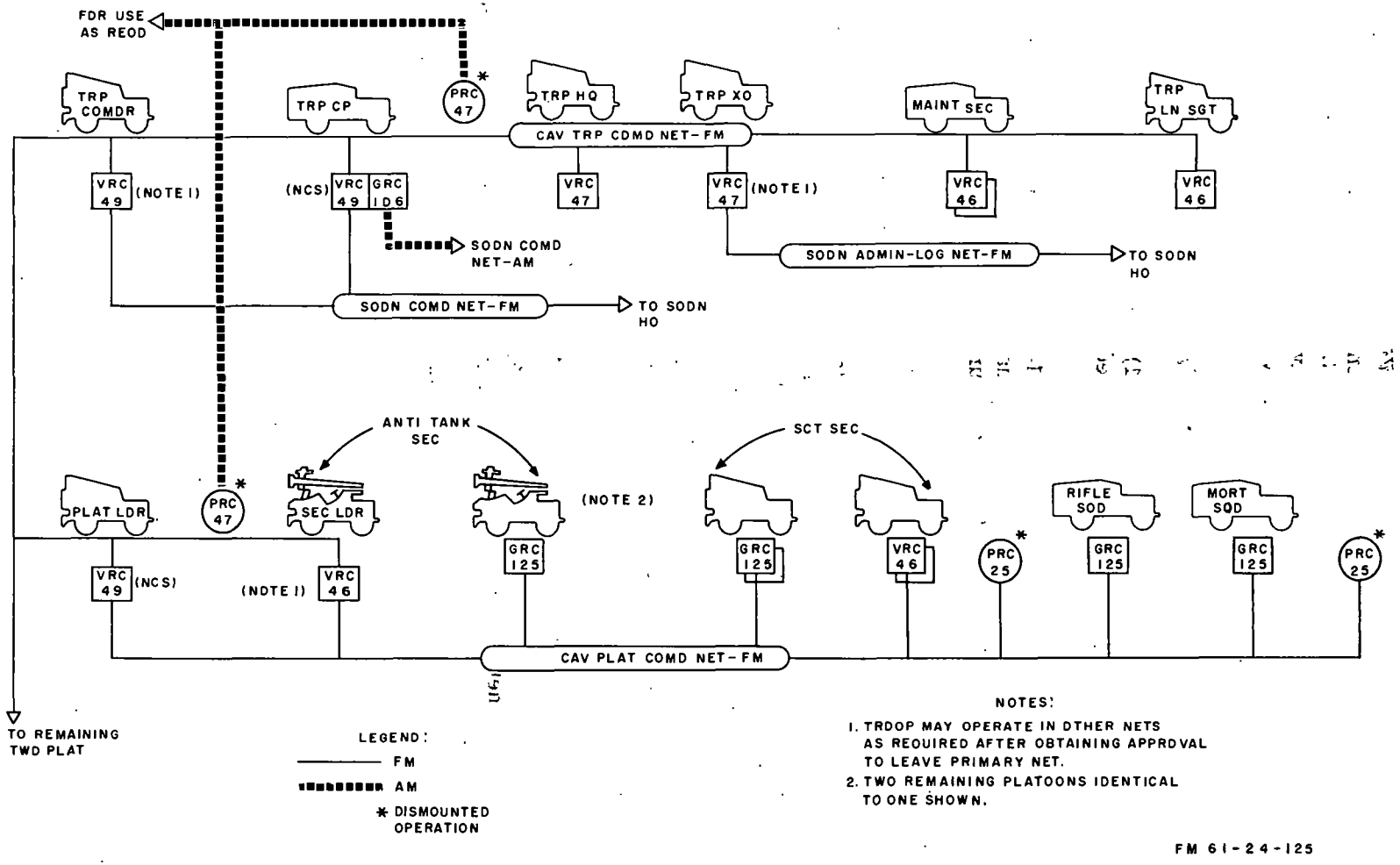


Figure 31–4. Type radio nets, cavalry troop, cavalry squadron.

CHAPTER 32

DIVISION ARTILLERY COMMUNICATIONS

(STANAG 2043)

Section I. GENERAL INFORMATION

32–1. Mission

Division artillery of an airmobile division has the mission to provide direct and general artillery support. The specific mission and capabilities of component units of division artillery with emphasis on communication will be identified in the subsequent sections and paragraphs of this chapter.

32–2. Composition of Division Artillery

Division artillery of an airmobile division consists of the following:

a. One headquarters and headquarters battery, division artillery (TOE 6–701).

b. One aviation battery (TOE 6–702).

c. Three filed artillery battalions (105mm) towed, all of which will be completely airmobile (TOE 6–705).

d. One field artillery battalion, aerial artillery (TOE 6–724).

32–3. Organization for Communications

With the exception of the aviation battery, each of the units listed above has an organic communications platoon or section and is authorized a communications-electronics (C–E) officer.

a. Headquarters Battery, Division Artillery. The division artillery C–E officer and the division artillery communications platoon are organic to the division artillery headquarters and headquarters battery with the C–E officer serving on the division artillery special staff. The communications platoon leader acts as direct assistant to the division artillery C–E officer.

b. Field Artillery Battalion, 105mm Towed. Each of the 105mm field artillery battalions (cannon battalions) has a C–E officer and communications platoon organic to its headquarters, headquarters and service battery. The battalion C–E officer is a special staff officer and is part of battalion headquarters. The platoon leader of the battalion communications platoon also acts as assistant battalion C–E officer.

c. Field Artillery Battalion, Aerial Artillery. The aerial field artillery battalion has a C–E officer and a communication section. The battalion C–E officer at battalion headquarters serves on the battalion special staff and is assisted by the assistant C–E officer who normally commands the battalion communications section.

d. Firing Battery. Each cannon firing battery of the 105mm battalions is authorized a communications section with an enlisted communications chief and specialists as required. Aerial field artillery batteries have a combined flight operations and communications section with an enlisted communications chief.

e. Type Duties of Personnel. Detailed discussions on the type duties of personnel, both officer and enlisted, are given in chapter 2.

Section II. DIVISION ARTILLERY HEADQUARTERS COMMUNICATIONS

32–4. Airmobile Division Artillery Headquarters and Headquarters Battery

a. The airmobile division artillery headquarters battery has the mission to direct and coordinate the operations of airmobile division artillery and its attached units. In addition, the battery provides the facilities for control of these units.

b. The subsequent discussions of this section will identify the communication facilities that specifically relate to the division artillery headquarters and headquarters battery.

32–5. Communications to Higher Headquarters

a. Radio. Airmobile division artillery normally has radio stations in the following higher headquarters nets. Refer also to paragraph 28–11.

(1) *Division command operations net—FM.* Division artillery headquarters and headquarters battery will provide radio stations with the division artillery commander and the executive officer (fig. 32–1).

(2) *Division operations intelligence net*

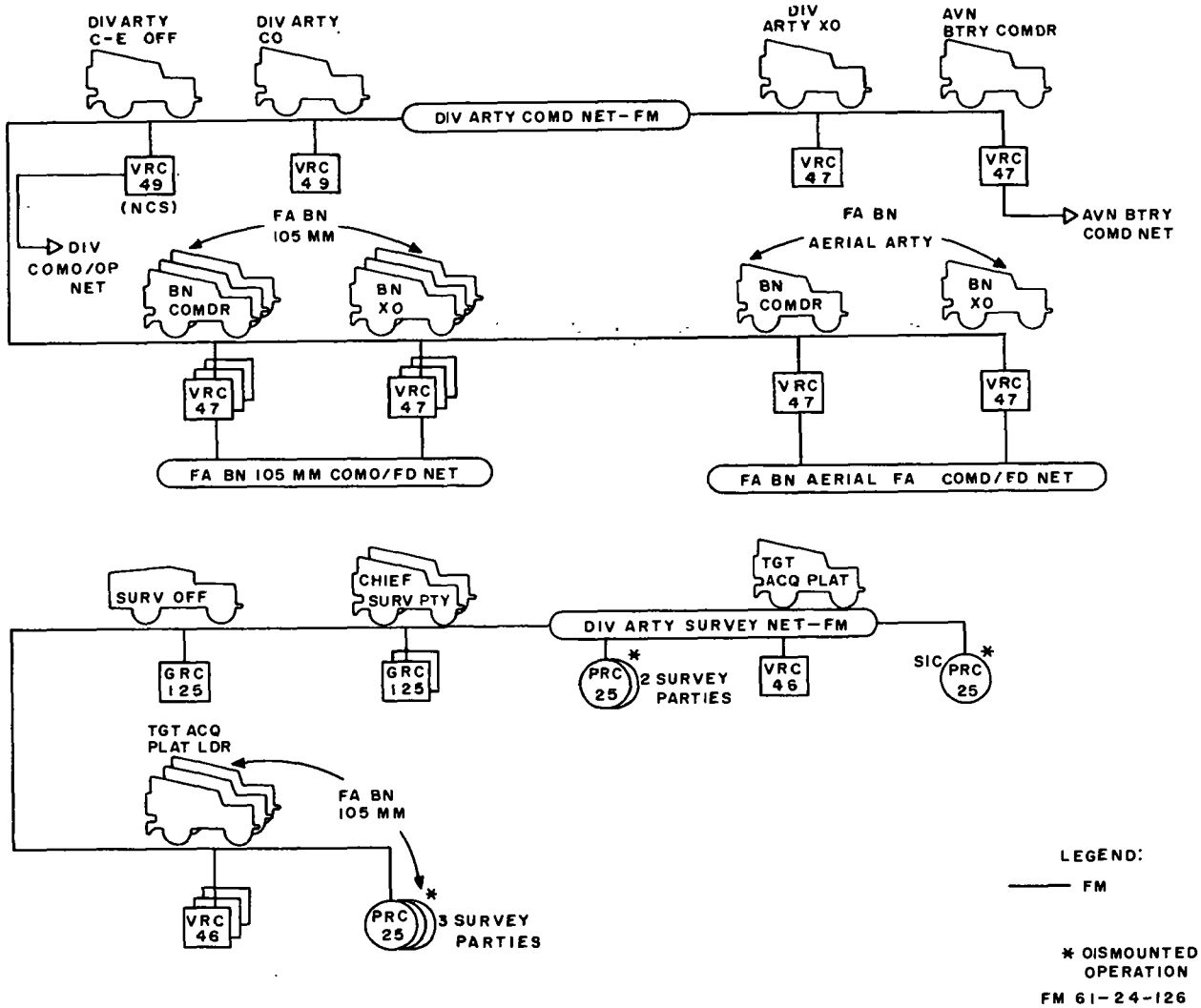


Figure 32–1. Type FM command/fire direction and survey nets, airmobile division artillery.

—*FM*. Station is provided by the division signal battalion (fig. 32–2).

(3) *Division command net No. 1—RATT*. Station is provided by division signal battalion (fig. 32–2).

(4) *Division command net No. 2—RATT*. Station is provided by division signal battalion (fig. 32–2).

(5) *Division administrative logistics net No. 4—RATT*. Station is provided by division signal battalion (fig. 32–2).

b. Wire. If division artillery headquarters is located as part of a division base area, wire and cable trunks will suffice to connect into the division system. If, however, division artillery is located separately and at considerable distance from division main facilities, the division signal battalion will provide a multichannel

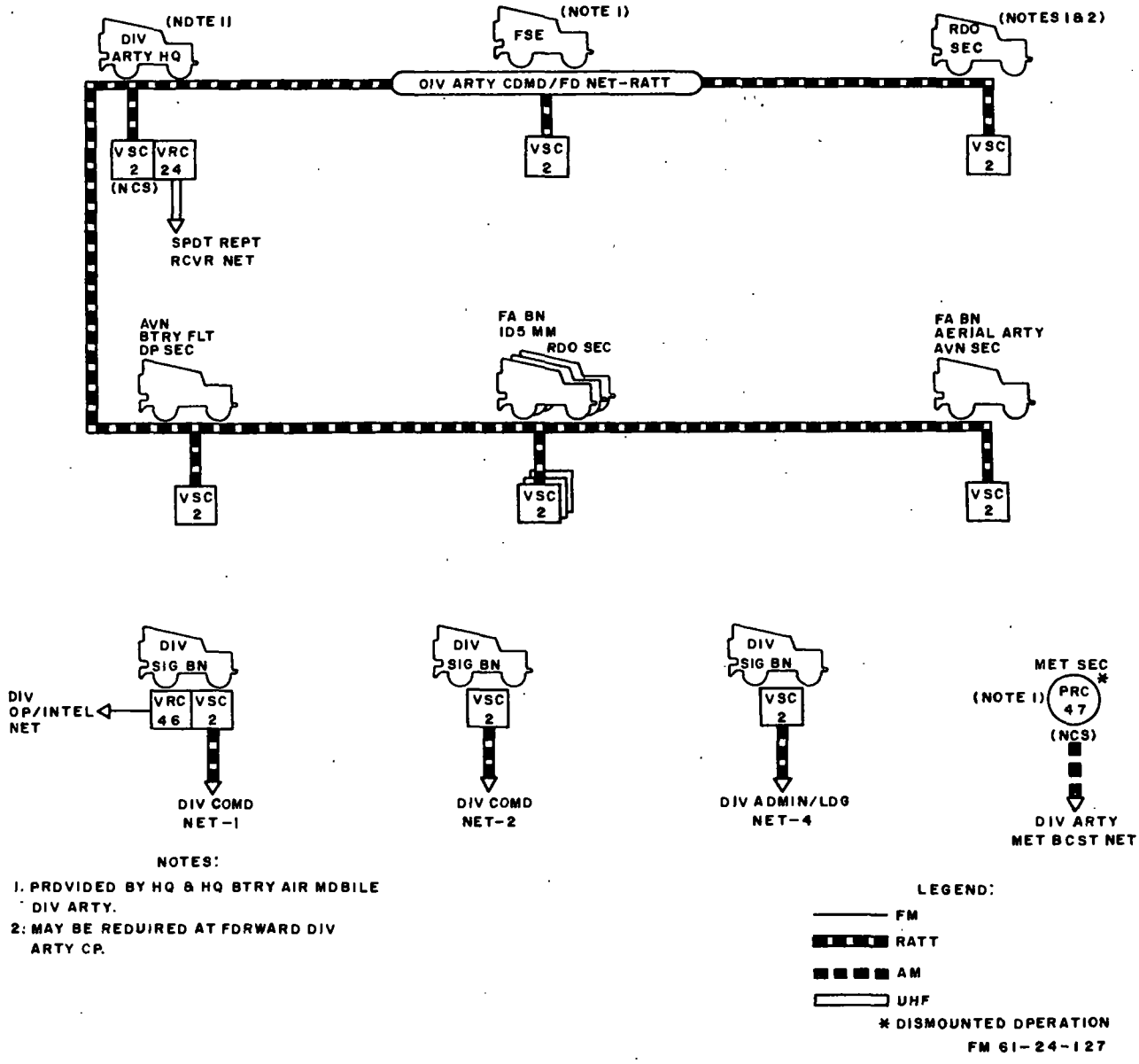


Figure 32–2. Type radio teletypewriter nets, airmobile division artillery.

radio terminal at division artillery headquarters for access into the division communications system.

c. Messenger. Division artillery receives both scheduled and special messenger service from the division headquarters or base. If distances are long, air messenger service is used.

32–6. Communications to Subordinate Units

a. Radio. Headquarters and headquarters battery, division artillery, normally operates and controls the nets listed below:

(1) *Division artillery command net (FM).* This voice net (fig. 32–1) provides direct voice communications from division artillery headquarters (artillery commander) to the commanders and executive officers of the field artillery battalions and the *aviation battery.* As configured, the net (fig. 32–1) is primarily used for administrative and technical control; however, the division artillery commander or his deputy may switch frequencies to operate in this net which then becomes a direct voice command net to the subordinate commanders. If it becomes necessary to pass fire directions over this net, they will preempt all other traffic. Headquarters and headquarters battery provides the C-E officer's station as nominal NCS in this net when the division artillery commander or his deputy are operating in division artillery operations/fire direction or the division command/operations nets.

(2) *Division artillery command/fire direction net—RATT.* This AM RATT net (fig. 32–2) is operated by division artillery to communicate with the cannon and aerial field artillery battalions. It is used to transmit tactical and administrative orders, fire missions, and meteorological messages. The battalions use this net to request additional fire support from division artillery and to exchange information and intelligence. NCS is provided at division artillery headquarters by the communications platoon, headquarters and headquarters battery.

(3) *Division artillery fire direction net—FM.* This FM voice net is used to process fire missions and exchange information and intelligence. Stations provided by division artillery headquarters and headquarters battery are shown in figure 32–2 with NCS at division artillery FDC.

(4) *Division artillery operations/fire direction net—FM.* This net provides communications with elements of the staff, aircraft, and subordinate units for tactical control, administrative supervision, and exchange of information and intelligence. If required, the net may also be used for fire missions which will preempt all other traffic. Headquarters and headquarters battery provides stations as shown in figure 32–3 with NCS at division artillery FDC.

(5) All survey sections of divisional units within the corps area may operate on one common artillery survey channel. The deployment of divisional units coupled with the transmission range of their organic radios will not significantly interfere with the ability of survey parties to accomplish their mission while operating on the same channel. The channel used will be different from the field artillery target acquisition battalion survey channel or the nondivisional corps survey channel. Figure 32–1 depicts the survey net as an internal net with NCS in the survey officer's vehicle.

b. Wire. Wire communications are normally restricted to installations within landing zones and the base camp. At division artillery headquarters, the headquarters battery provides a switched telephone system with teletypewriter set and telegraph terminal for use as required (fig. 32–4).

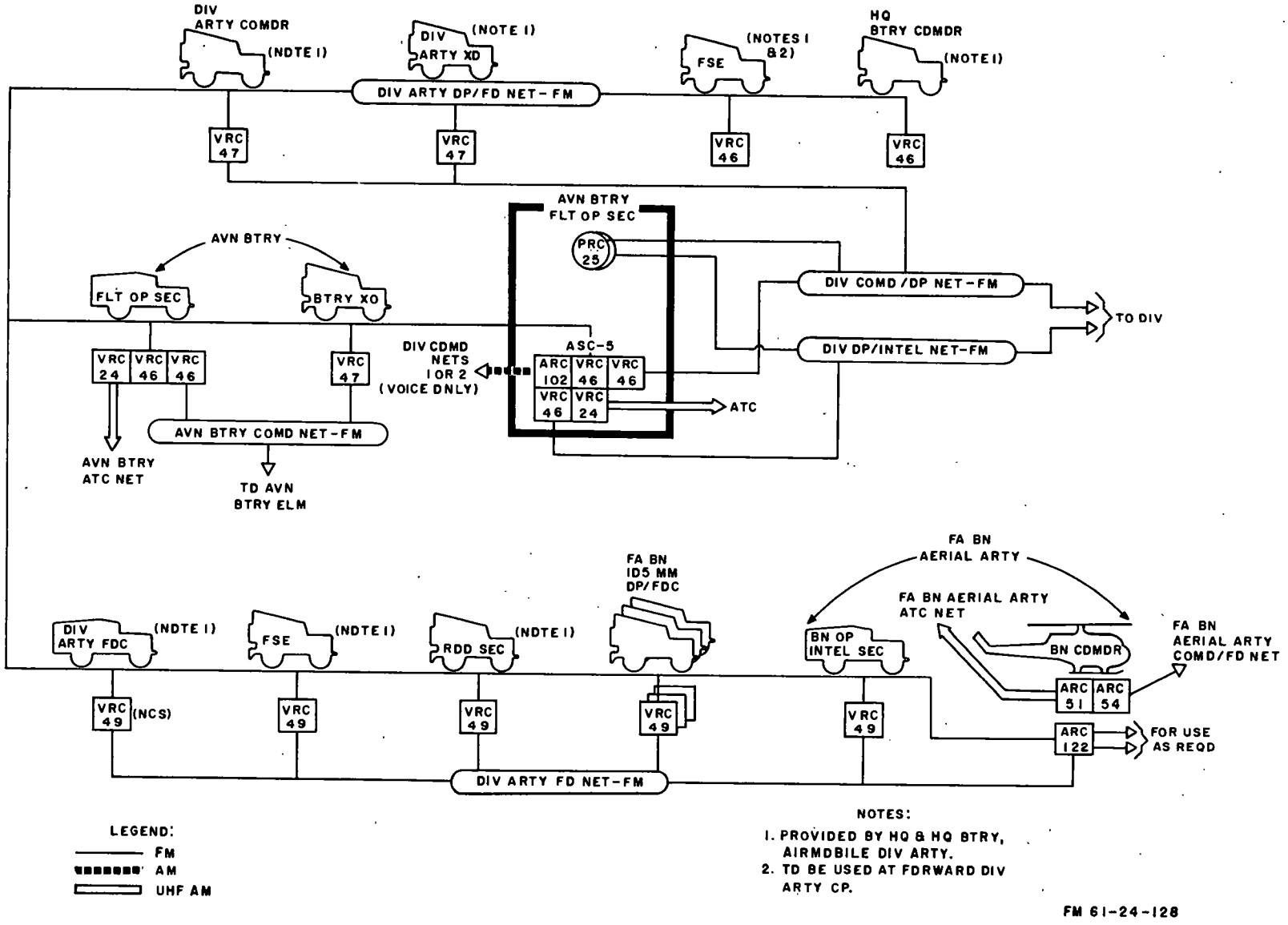
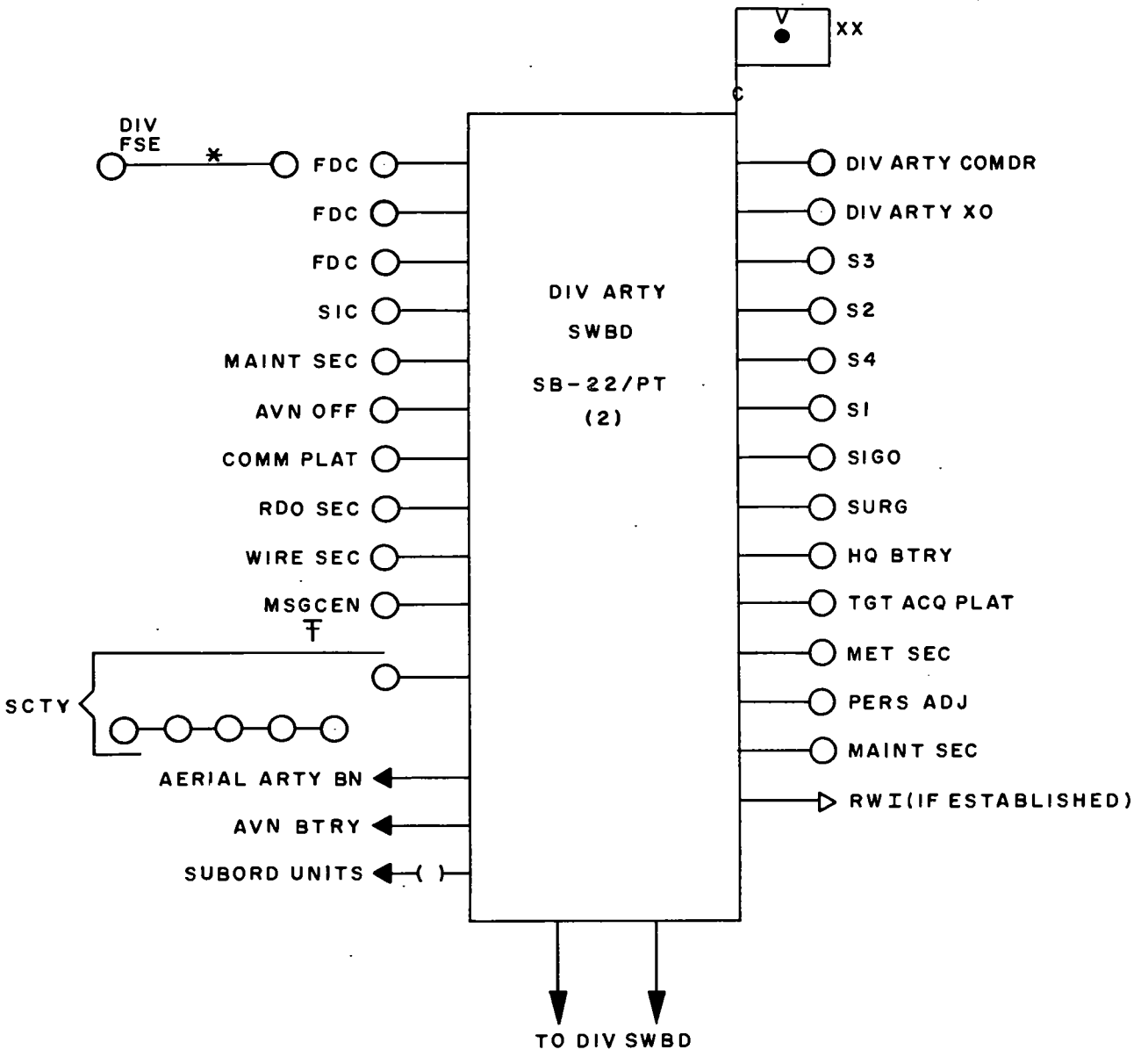


Figure 32–3. Type FM operations and fire direction nets, airmobile division artillery.



NOTE:

SWITCHBOARDS CAN ACCOMMODATE 29 LINES OR TELEPHONES. AND ONE OPERATORS LINE PACK.

LEGEND:

- TELEPHONE SET TA-312/PT
- * SOLE USER CIRCUIT
- ONE COMMON USER CIRCUIT
- MORE THAN ONE COMMON USER CIRCUITS
- TELETYPEWRITER

FM 61-24-129

Figure 32–4. Type wire system, headquarters and headquarters battery division artillery.

Section III. AVIATION BATTERY COMMUNICATIONS

32–7. General

Aviation battery, airmobile division artillery has the mission to provide airmobile division artillery with immediately responsive aviation support. Aircraft provided by this battery are used for aerial observation, reconnaissance, and surveillance of enemy areas to locate, verify, and evaluate targets, peform terrain studies, and adjust artillery fires. Also provided by the battery are the aircraft for artillery commanders, liaison, reconnaissance, and transportation. Other functions performed may include aerial wire laying and radio retransmission. For more complete information refer to appropriate artillery field manuals when published and TOE 6–702.

32–8. Communications to Higher Headquarters

a. Radio. The aviation battery normally provides radion stations in the following higher headquarters nets (fig. 32–5) :

(1) Division artillery command net—FM.

(2) Division artillery command/fire direction net—RATT.

(3) Division artillery operations fire direction net—FM.

(4) Division command-operations net—FM. The flight operations section provides a ground portable radio station for operation in this net. This radio may accompany the artillery airborne CP for later use on the ground when the division artillery commander or his staff deplanes; or, the radio may be otherwise used as required.

(5) Division operations-intelligence net —FM ((4) above).

(6) Communications central. The flight operations section provides a communications central with sufficient FM radio sets to permit an airborne division artillery CP to operate in the division operations intelligence net, the division command operatins net, and the division artillery command/fire direction net (fig. 32–5). In addition, this communications central has an AM-SSB radio set which may afford access on a voice basis into division command nets No. 1 or 2. Note that the utilizations given are intended as types only; for example, radio sets of the communications central may be totally required for operation in internal division artillery radio nets.

b. Wire. When feasible, wire or cable trunks to higher headquarters switchboards, either division main or division artillery, are provided by the higher headquarters communications support. Refer to figure 32–6.

32–9. Communications to Subordinate Units

a. Radio. Internal radio nets (fig. 32–5) operated by the aviation battery are listed below:

(1) *Aviation battery command net—FM.* This net is used for internal control and administration of the battery. Stations of the battery are shown in figure 32–5 with NCS at the flight operations section.

(2) *Aviation battery—air traffic control net (UHF).* This voice radio net is used for the purpose indicated (fig. 32–5) with NCS at the flight operations section.

b. Wire. A switchboard is authorized to the flight operations section for establishing a local wire system as required. Refer to figure 32–6.

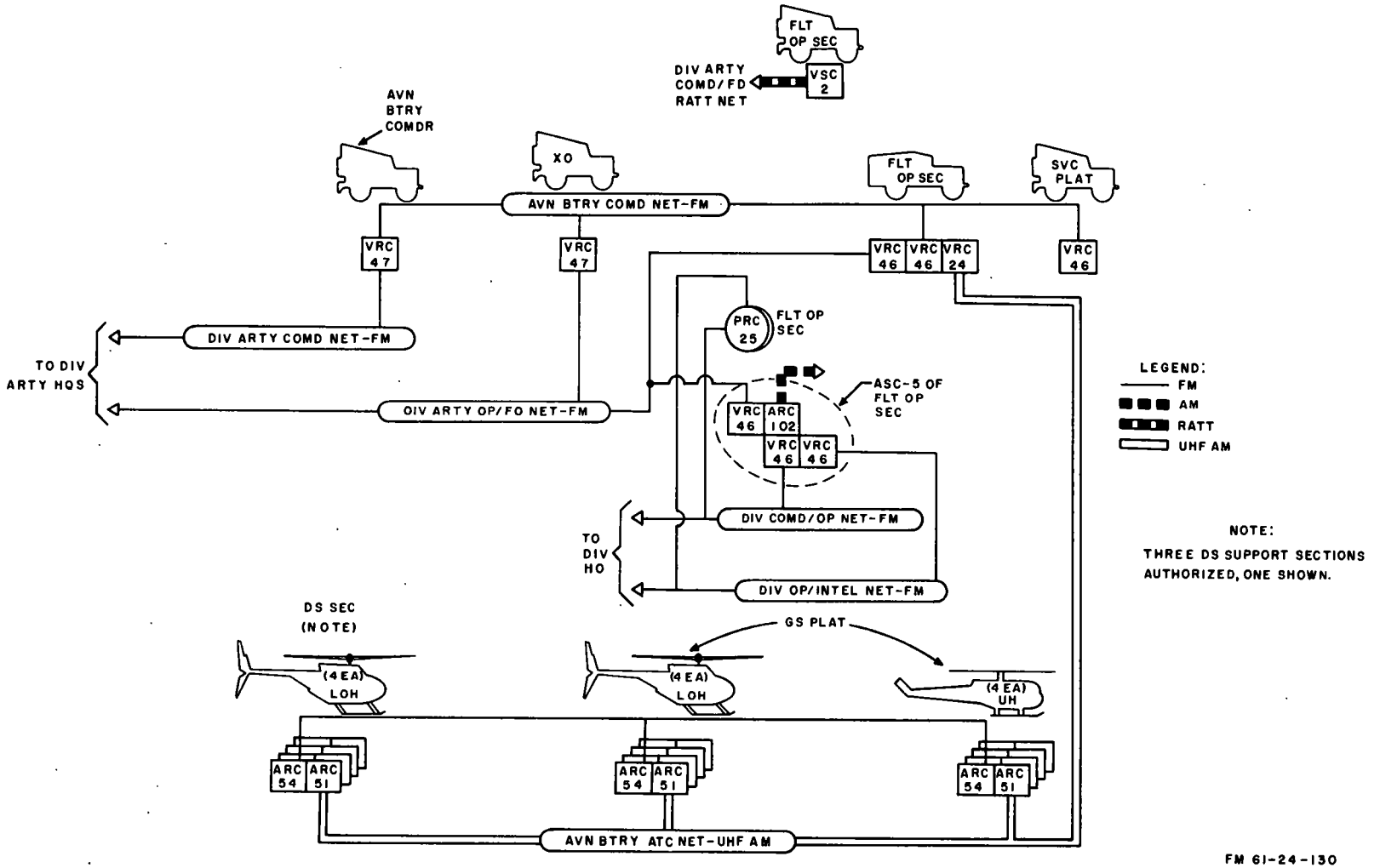


Figure 32-5. Type radio nets, aviation battery, airmobile division artillery.

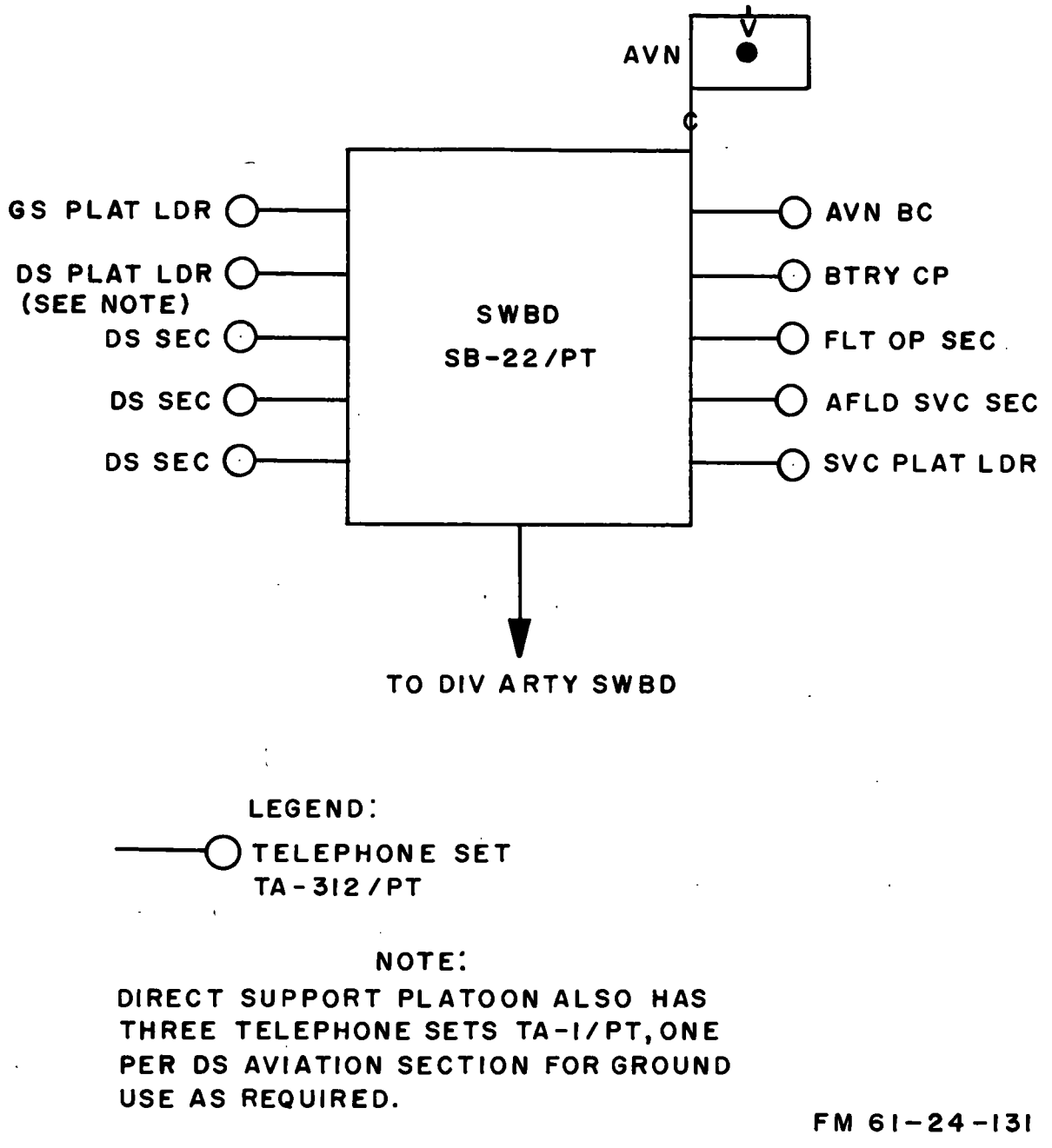


Figure 32-6. Type wire system, aviation battery, airmobile division artillery.

Section IV. COMMUNICATIONS IN THE FIELD ARTILLERY BATTALION, 105MM TOWED

32-10. Basic Considerations

a. Each of the three 105mm field artillery battalions (TOE 6-705) has the mission to provide both direct and general artillery support to include target acquisition, signal communications, liaison, survey and logistics. In addition, each battalion may be required to reinforce the fires of other field artillery units.

b. Each of these cannon battalions consists of the headquarters, headquarters and service battery, and three firing batteries. A battalion communications platoon is organic to the headquarters and service battery.

32–11. Characteristics of Communications

a. In airmobile field artillery operations, communications requirements are not met primarily by the use of organic voice radios in maintaining the constant liaison necessary between the artillery and the supported units. Wire communications are rarely used except for internal local telephone lines.

b. Multiple use of voice radio nets provides both command and fire direction channels of communications. Note that in the discussions that follow, the FDC communications channels of airmobile field artillery batteries are in one radio net. Consequently, the restricted number of radio nets in the 105mm battalion will require a high degree of traffic discipline and judicious use of each channel of communication available.

32–12. Headquarters, Headquarters and Service Battery

a. External Communications.

(1) *Radio.* External radio nets in which the headquarters, headquarters and service battery maintains stations are listed below. (Refer to para 32–5 and fig. 32–7.)

(*a*) Division artillery command net—FM.

(*b*) Division artillery command-fire direction net—RATT.

(*c*) Division artillery operations-fire direction net—FM.

(*d*) Division artillery fire direction net—FM.

(*e*) Division artillery survey net—FM.

(*f*) Headquarters, Headquarters and Service Battery has the capability of entering the following nets as required:

1. Supported brigade command net—FM.

2. Supported battalion command net—FM.

3. Supported company command net—FM.

4. Forward service support team net—FM.

(2) *Wire.* Wire or cable links from division artillery headquarters to cannon battalion headquarters may be installed when—

(*a*) These headquarters are adjacently located.

(*b*) Separating distances are relatively secure and not excessive in length.

b. Internal Communications.

(1) *Radio.* Radio nets required for internal control of cannon battalion are discussed below:

(*a*) *Field artillery battalion, 105mm, command fire direction net—FM.* This net provides a communication means for the transmission of orders and for the tactical control and administration of subordinate units. The net may also be used for the control of fire missions which will take precedence over all other traffic. Stations provided by the various elements of headquarters, headquarters and service battery are shown in figure 32–7 with NCS at battalion FDC.

(*b*) *Field artillery battalion, 105mm, fire/direction net—FM.* This is the primary net for the transmission of battalion fire missions. Stations provided by battalion headquarters, headquarters and service battery are shown in figure 32–7 with NCS at battalion FDC.

(*c*) *Field artillery battalion, 105mm, command/fire direction net—AM.* This AM—voice, SSB radio net provides an alternate long range command fire/direction net by utilizing portable AM radio equipments. Battalion communications platoon (radio section) provides the NCS at the operations/fire direction center.

(*d*) *Air defense section net.*

(2) *Wire.* In airmobile operations, wire communications from cannon battalion headquarters to each firing battery must be considered a secondary means of communications to be installed when the tactical situation permits. Type internal wire systems installed for battalion headquarters use are shown in figure 32–8.

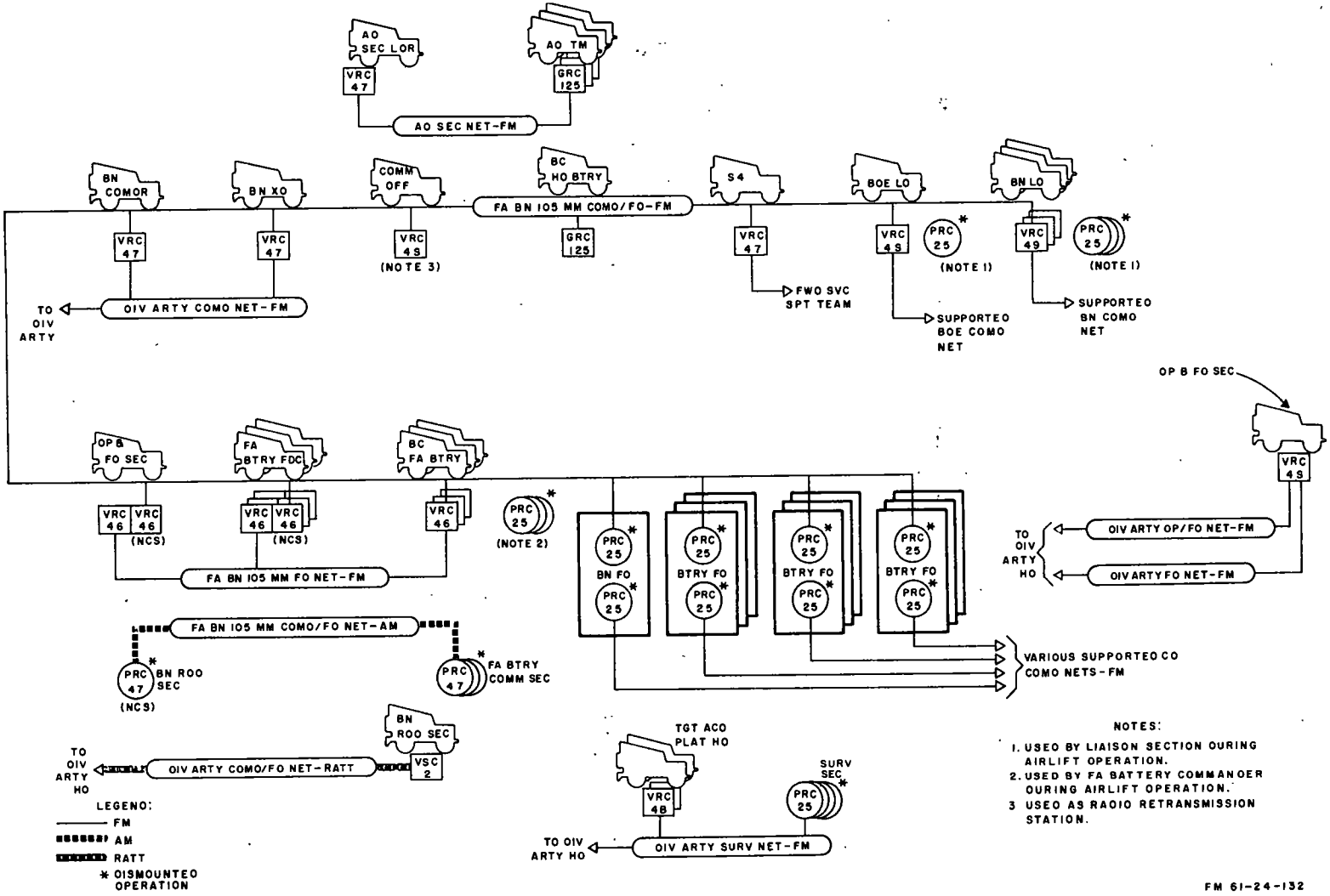


Figure 32–7. Type radio nets, field artillery battalion, 105mm towed, airmobile division.

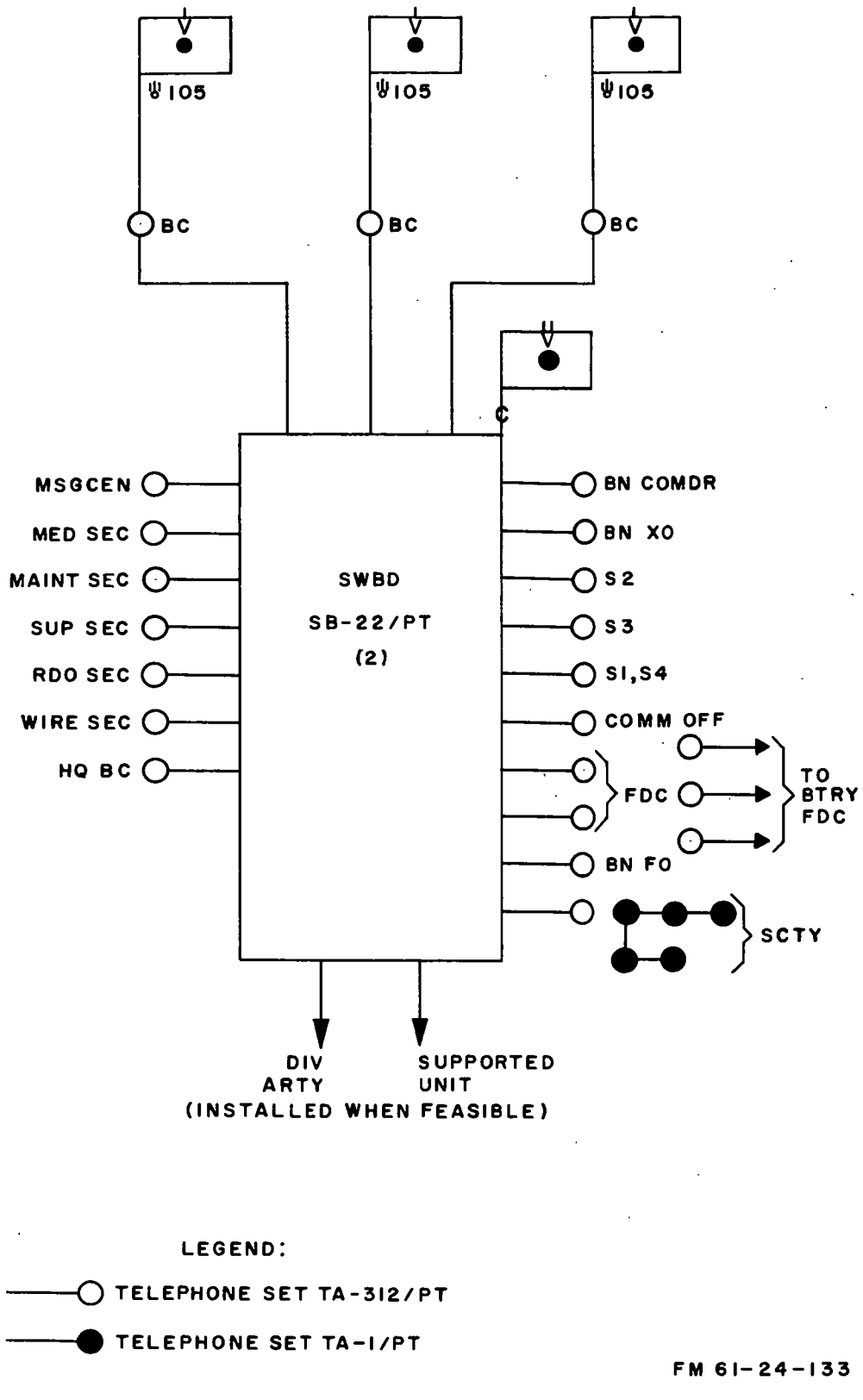


Figure 32-8. Type wire system, headquarters, headquarters and service battery, field artillery battalion, 105mm towed, airmobile division.

32–13. Firing Battery

Each of the three firing or cannon batteries of 105mm, towed, field artillery battalion provides a basic firing component of the battalion. Rapid and frequent displacement by helicopter characterizes the operation of each firing battery. Communications installations, therefore, are kept to a minimum consistent with retention of flexibility and reliability in communications to insure adequate fire support of combat units.

a. Radio. The airmobile field artillery cannon battery does not operate separate radio nets for internal communications. Control of battery operations is therefore through organic radio stations operating in battalion nets. (Refer to para 3–2 for discussion.) A listing of radio nets (fig. 32–7) with battery stations follows:

(1) Field artillery battalion command/fire direction net—FM.

(2) Field artillery battalion 105mm fire direction net—FM.

(3) Field artillery battalion 105mm command/fire direction net—AM.

(4) Supported company command net—FM. As required, each battery forward observer enters the company command net of the unit being supported.

b. Wire.

(1) Normally, the airmobile firing battery installs internal wire lines, but does not install external wire communications (fig. 32–9).

(2) A telephone central and switching group is advantageously located for use of the battery howitzer sections. Each howitzer section lays a wire line to this equipment. A battery wire team installs wire lines from the telephone central to the computer and recorder of the battery FDC. To facilitate laying the battery, the line to the recorder should have sufficient slack to permit the moving of his telephone to the aiming circle if required. Where necessary, the radio telephone operator's phone may be connected to the computer's telephone for direct connection of FDC fire commands to the howitzer sections.

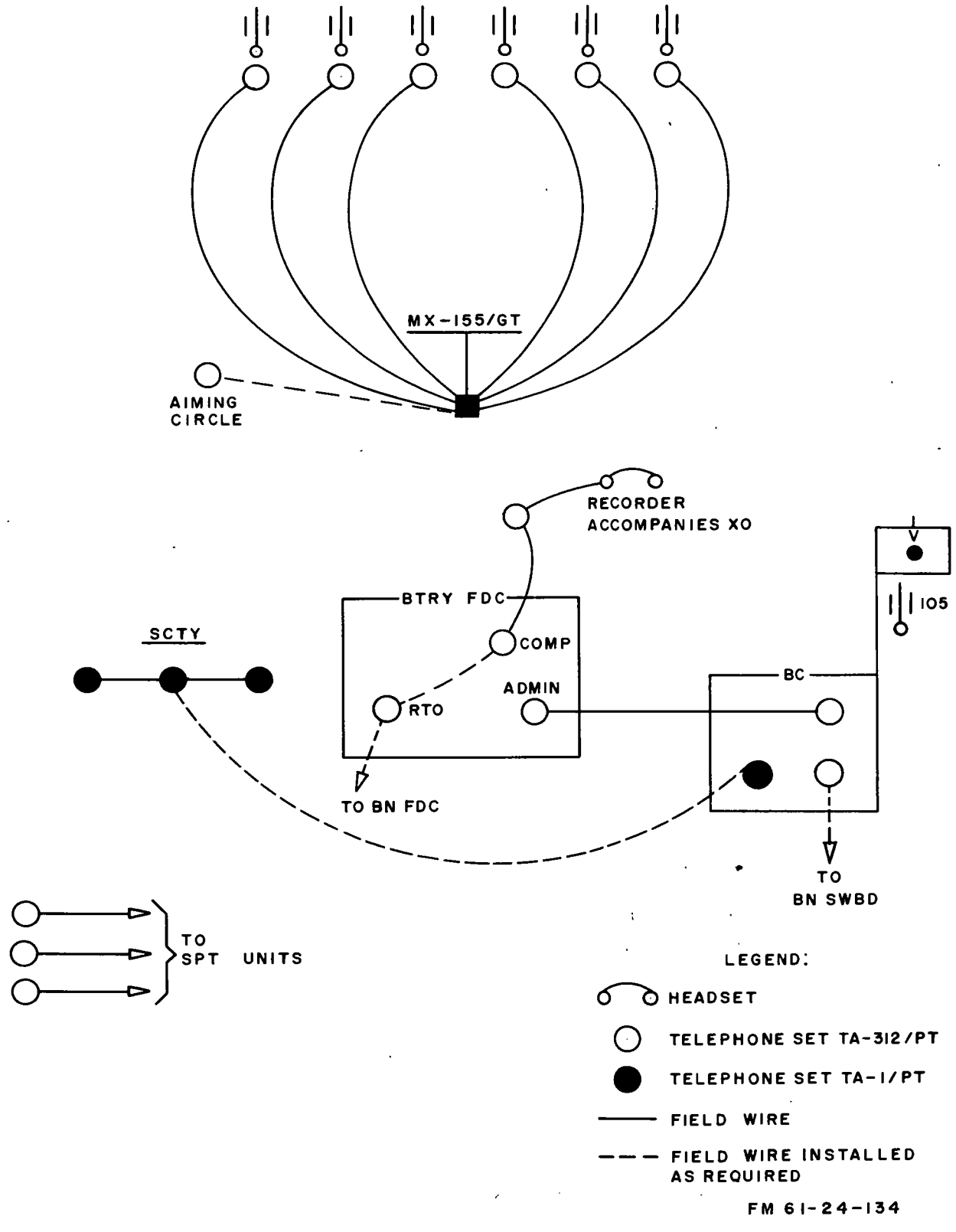


Figure 32-9. Type wire system, field artillery battery, 105mm towed, field artillery battalion, airmobile division.

Section V. COMMUNICATIONS IN THE FIELD ARTILLERY BATTALION, AERIAL ARTILLERY

32–14. Basic Considerations

a. The aerial field artillery battalion (TOE 6–725) has the mission to provide aerially mounted rocket fire in direct support of the assault units of the airmobile division. Close support fires delivered by this battalion are particularly useful during movement enroute, landing, and initial assault on the objective. Direct support cannon artillery requires both delivery to the assault area and prepositioning to support the assault before its cannon fire can supplement or ultimately replace aerial artillery fire. Thus, in all airmobile situations, direct aerial fire and indirect ground fire are advantageously complementary.

b. The field artillery battalion, aerial artillery, airmobile division, consists of a headquarters, headquarters and service battery and three aerial field artillery batteries. A communications section is organic to each headquarters, headquarters and service battery.

32–15. Characteristics of Communications

a. Aerial field artillery units deliver supporting fires from helicopters in flight, utilizing speed, agility, and responsiveness to achieve surprise and to effect destruction of area targets. Because of this, tactical communication requirements of the aerial field artillery battalion are met primarily by single channel voice radio nets.

b. Since the battalion commander and/or the battalion CP are frequently airborne, a communication central is provided for use in this airborne CP. This communications central will normally provide FM voice radio communication in the division artillery fire direction and operation fire direction nets with two additional channels for use as required by the aerial field artillery battalion commander.

32–16. Headquarters, Headquarters and Service Battery

a. External Communications.

(1) *Radio.* External radio nets in which the headquarters, headquarters and service battery operates stations are listed below. Refer to figure 32–10 and paragraph 32–5.

(*a*) Division artillery command net—FM.

(*b*) Division artillery fire direction net—FM.

(*c*) Division artillery operations-fire direction net—FM.

(*d*) Division artillery command-fire direction net—RATT.

(2) *Wire.* Discussion given in paragraph 32–12*a*(2) may be applied to the wire-cable requirements from division artillery to the aerial ground command post of the artillery battalion.

b. Internal Communications.

(1) *Radio.* Radio nets (fig. 32–10) required for internal control of the aerial artillery battalion are discussed below.

(*a*) *Field artillery battalion aerial artillery command/fire direction net (FM).* This net is used primarily for the receipt and transmission of fire missions, for the exchange of information and intelligence, and when necessary, for tactical and administrative control. NCS is in the operation intelligence section.

(*b*) *Field artillery battalion aerial artillery command/fire direction net (AM).* This voice net provides an alternate command and fire direction net using portable AM SSB equipment. NCS is provided at battalion headquarters by the communications section.

(*c*) *Field artillery battalion aerial artillery ATC net–(UHF).* This AM UHF voice net is used for air traffic control of the aviation section helicopters. NCS is in the operations and intelligence section.

(2) *Wire.* Normally, wire communications are established for the aerial artillery battalion CP area only. Refer to figure 32–11 for a type battalion wire system.

32–17. Aerial Field Artillery Battery

a. External Communications.

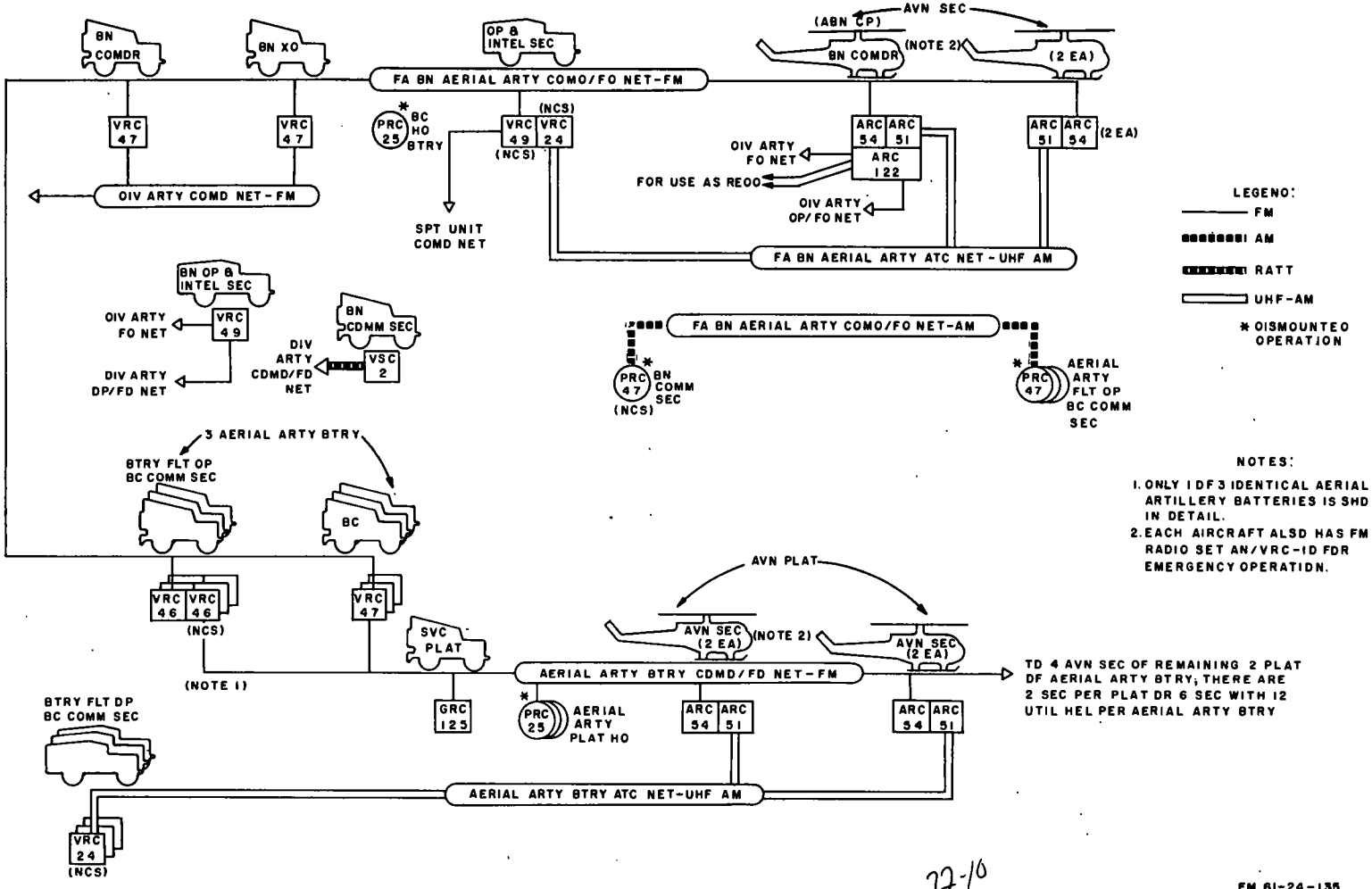


Figure 32–10. Type radio nets field artillery battalion, aerial artillery, airmobile division.

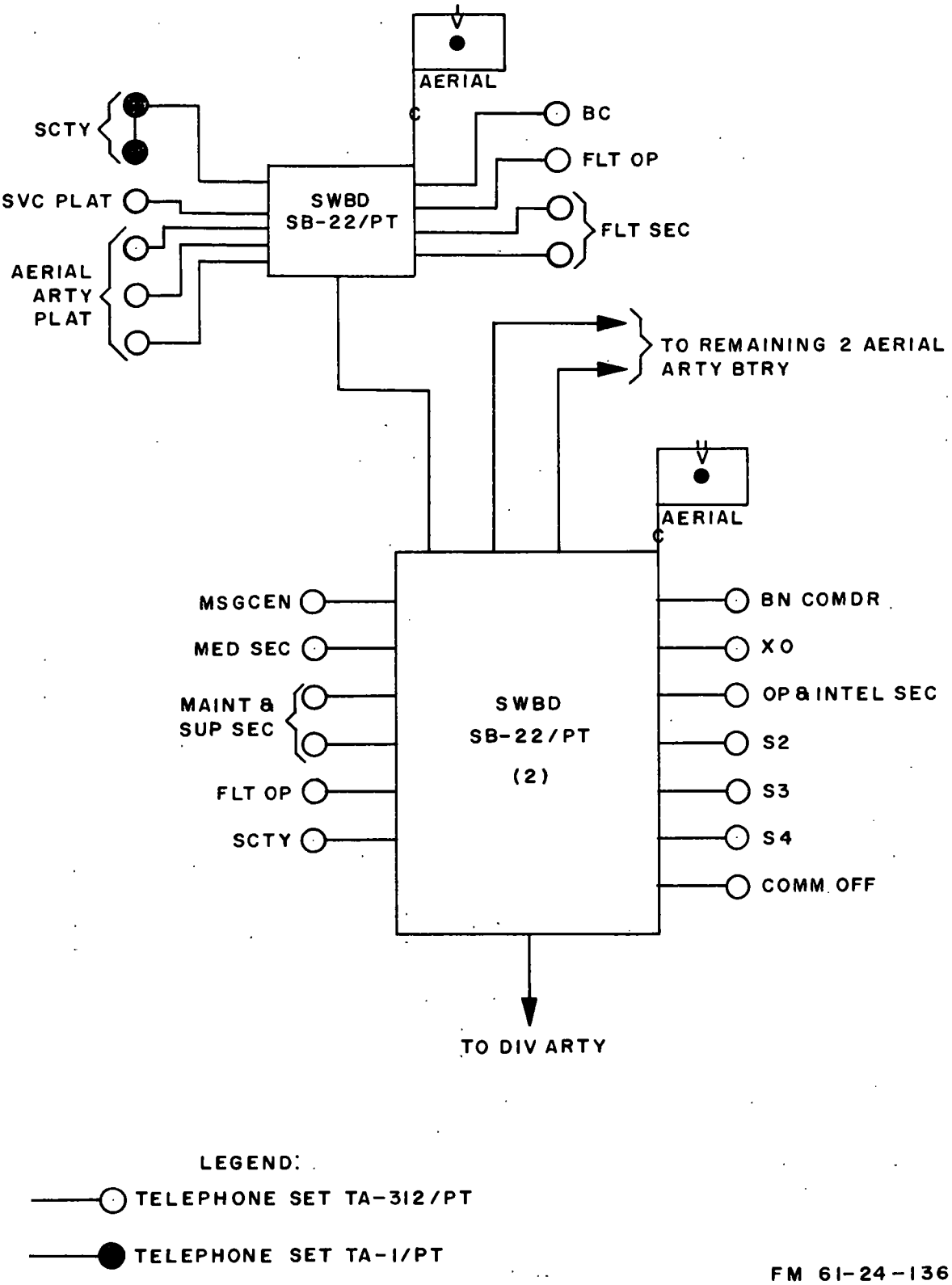


Figure 32-11. Type wire system, field artillery battalion aerial artillery, airmobile division.

32–17. Aerial Field Artillery Battery

a. External Communications.

(1) *Radio.* The battery flight operations and communications section operates ground stations in the external radio nets listed below (fig. 32–10). Refer to paragraph 32–13 for discussion of these nets.

(*a*) Field artillery battalion aerial artillery command/fire direction net—FM.

(*b*) Field artillery battalion aerial artillery command/fire direction net—AM.

(2) *Wire.* Battalion headquarters may, under certain favorable circumstances, extend a wire or cable trunks to the battery switchboard.

b. Internal Communications.

(1) *Radio.* The aerial artillery battery operates radio stations in the nets (fig. 32–10) described below:

(*a*) *Aerial artillery battery command fire-direction net (FM).* This net is used for the command, administration and fire control. NCS is in as the battalion operations and intelligence section.

(*b*) *Aerial artillery battery air traffic control net (UHF).* This UHF AM voice net is used for air traffic control of battery aircraft. NCS is operated at each battery flight operations and communications section.

(2) *Wire.* A type wire system for internal use of aerial battery is shown in figure 32–11.

CHAPTER 33

COMBAT AVIATION GROUP COMMUNICATIONS (STANAG 2043)

Section I. GENERAL INFORMATION

33-1. Mission

The combat aviation group of the airmobile division provides division aviation support and aviation special staff personnel at division headquarters. For further details refer to FM 1-15. The specific mission and capabilities of the component units of the combat aviation group with emphasis on communication will be discussed in the appropriate sections and paragraphs of this chapter.

33-2. Composition of Combat Aviation Group

The combat aviation group of an airmobile division consists of the following:

a. One headquarters and headquarters company, combat aviation group (TOE 1-101).

b. One general support (GS) aviation company (TOE 1-102).

c. Two assault helicopter battalions (TOE 1-155).

d. One assault support helicopter battalion (TOE 1-165).

33-3. Organization for Communications

The organization for communications among the major component elements of the aviation group are as follows:

a. Headquarters and Headquarters Company, Aviation Group. A C-E staff officer as member of the group special staff and a communications platoon are organic to this company, The communications platoon, uniquely organized to complement the functions of the aviation group, consists of a platoon headquarters, radio section, communications center and wire section, and five ground control approach teams, the communication platoon leader serves as direct assistant to the group C-E officer.

b. General Support Aviation Company. This company has communications specialists located among its component elements to direct support of organic functions as required. Communications to aviation group headquarters (except radio) will normally be provided by the group headquarters and headquarters company communications platoon.

c. Assault Helicopter Battalion. In the headquarters and headquarters company of each assault helicopter battalion, a C-E officer is authorized to serve on the battalion special staff with operational control over all battalion communicationa. Each headquarters and headquarters company also has a battalion communications section under an enlisted communications specialists who perform organic communications functions as required.

d. Assault Support Helicopter Battalion. The headquarters and headquarters company of this battalion is authorized a C-E officer who serves on the battalion special staff and exercises operational control over battalion communications. The battalion headquarters and headquarters company is also authorized a battalion communications section commanded by an enlisted communications chief. Each of

the component companies of the battalion have enlisted communications specialists to perform organic communication functions as required.

e. Type Duties. Refer to chapter 2 for type duties of signal communications personnel, both officer and enlisted.

33–4. Visual Communications

Radio and wire communications for the component units of the aviation group will be discussed in detail in paragraph 33–5 through 33–18. However, visual communications are of additional importance in all aircraft-to-ground operations, and the general discussion of this paragraph universally applies to all units engaged in any form of ground-to-air operations.

a. Improvised Signaling. Improvised signaling, such as that provided by flashlight, is useful in contacting and guiding aircraft, especially at night. Flashlights or other light devices may also be used to send prearranged messages. Standardization of improvised signaling must be prescribed by unit SOP.

b. Pyrotechnics. Pyrotechnic devices, including smoke, are issued in various colors and types with the meaning of the signals prescribed in the SOI. These devices can be used in daylight to identify friendly units, mark landing zones, lift or call for fires, mark targets, identify the location of a downed aircraft, and to indicate a site for medical evacuation. At night, pyrotechnic devices may be used to light or mark landing zones.

c. Panels. Two types of panels are normally used for communication with aircraft: identification panels made in bright fluorescent colors and black and white marking panels for use against light or dark backgrounds. The identification panels may be used to mark positions and landing zones or to identify friendly units; the dark and light marking panels are used in a combined panel system and panel recognition code, prescribed by SOI, to transmit and receive brief messages or to identify particular units.

d. Aircraft Maneuvers. Aircraft maneuvers, such as wing rocking, may be used for limited air-to-air or air-to-ground visual communications. Prearranged signals between aircraft or from aircraft to ground should be specified in the SOI or battalion SOP. Such signals are normally reserved for emergencies during periods of radio silence or failure, or for identifying aircraft to friendly observers on the ground.

Section II. AVIATION GROUP HEADQUARTERS COMMUNICATIONS

33–5. Headquarters and Headquarters Company, Aviation Group

a. This company (TOE 1–101) provides aviation special staff personnel for airmobile division headquarters, command, and staff support for the aviation group, pathfinder and terminal approach support for subordinate and attached units, and communications at group headquarters to both superior and subordinate headquarters.

b. The following paragraphs in this section will identify communication facilities provided by, or otherwise related to, headquarters and headquarters company, aviation group.

33–6. Communications to Higher Headquarters

a. Radio. Aviation group headquarters and headquarters company normally provides radio sets in the following higher headquarters nets with stations as shown in figure 33–1.

(1) Division command operations net—FM. Normally, the assistant division aviation officer uses one of the stations of the army aviation element at DTOC.

(2) Division operations and intelligence net—FM.

(3) Division administrative logistics net No. 4—RATT.

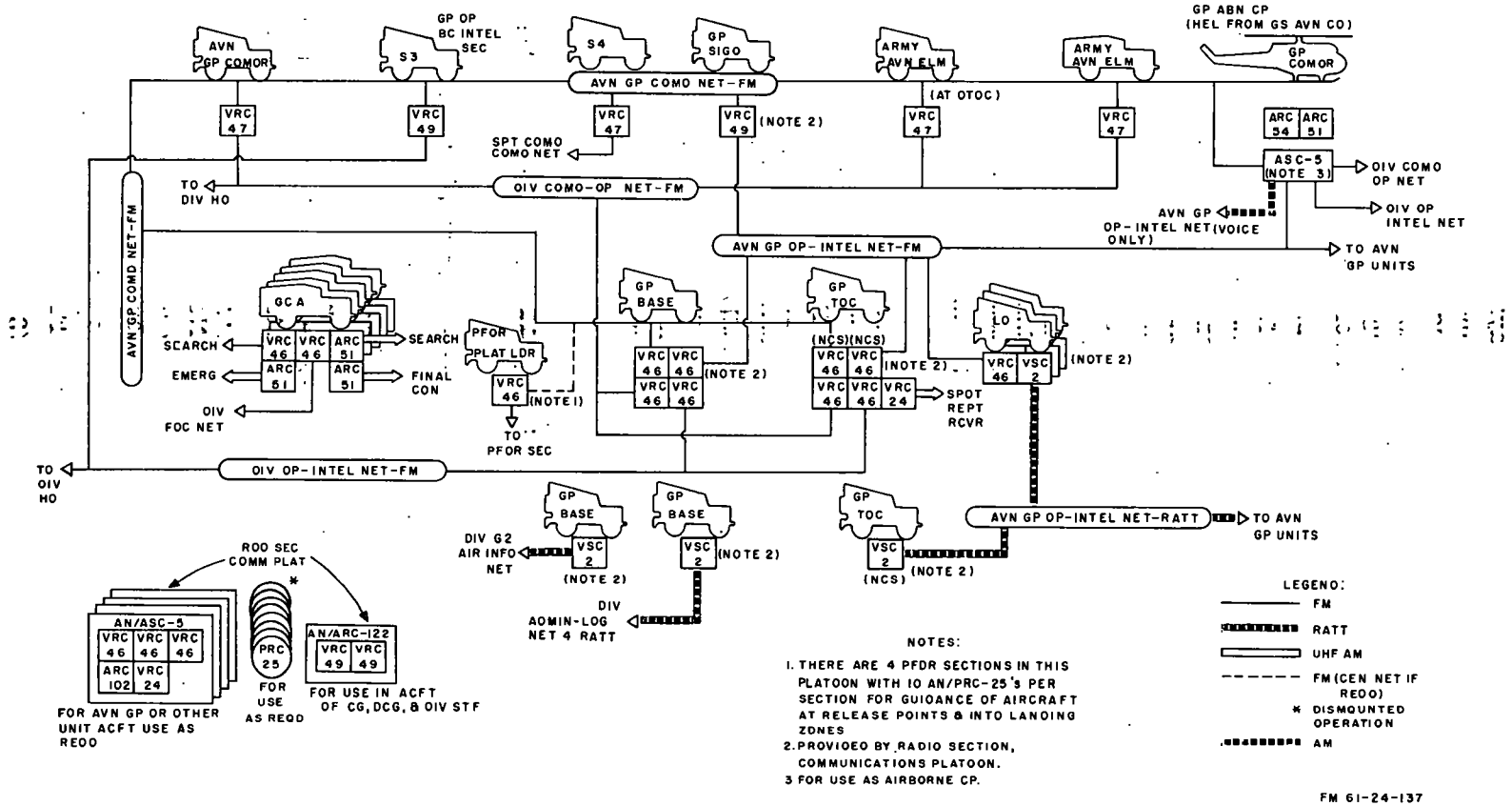


Figure 33–1. Type radio nets, aviation group headquarters, airmobile division.

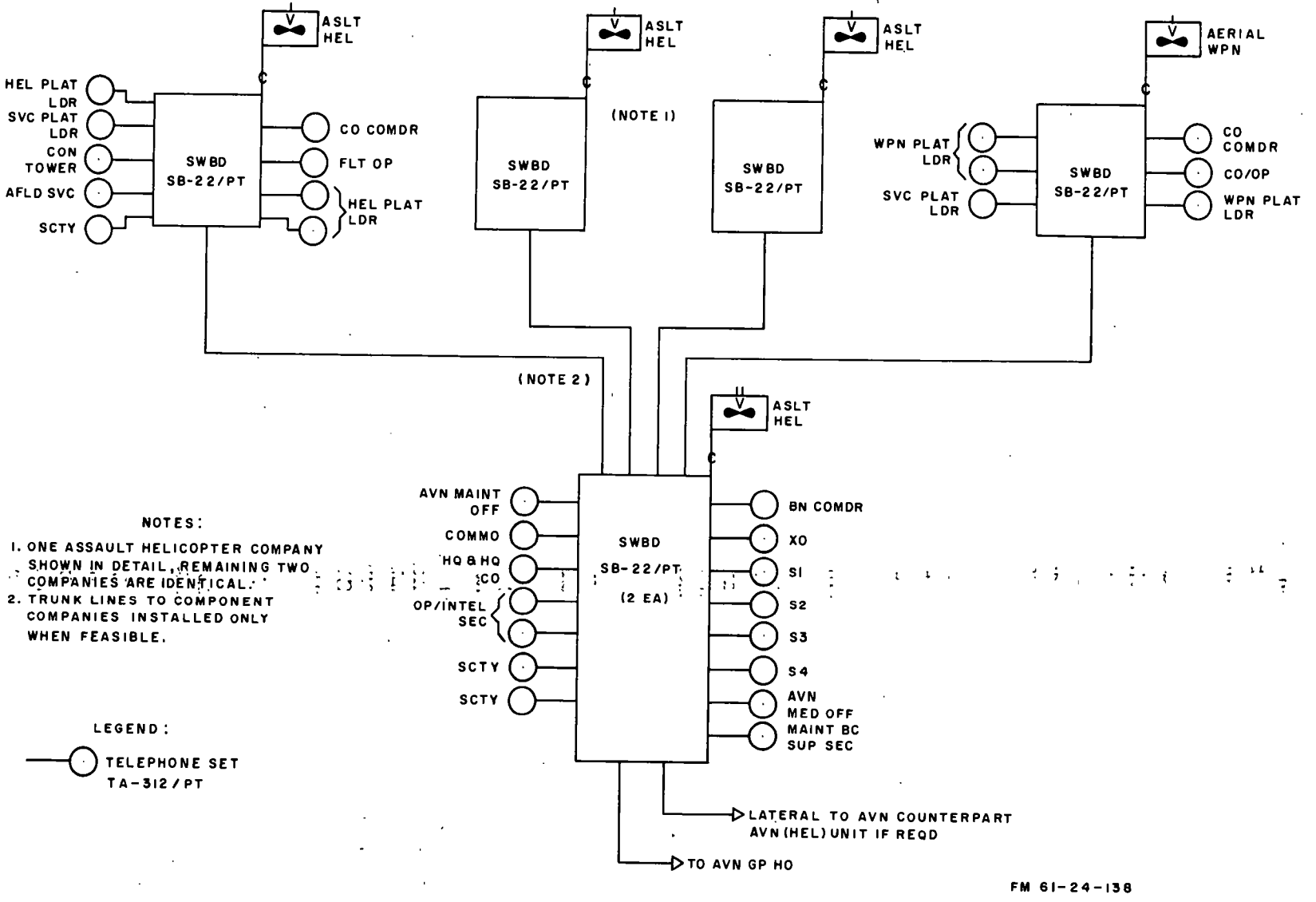


Figure 33-2. Type wire system, aviation group, headquarters airmobile division.

(4) Division G2 air information net—RATT. Note that the station at group base is used as required by the surveillance platoon, GS support aviation company.

b. Wire. If aviation group headquarters is located as part of division base area, wire and cable trunks will be used for telephone and teletypewriter links into the division communication system. Where aviation group headquarters is established separately and at considerable distance from division main or base, the division signal battalion will normally provide a multichannel radio terminal at aviation group headquarters for telephone and teletypewriter access into the division multichannel radio network (fig. 28–4).

c. Messenger. Division aviation group headquarters receives both scheduled and special messenger service from division main (or division base). If distances are long, air messengers are used. Note that aircraft for air messenger service throughout the division is normally provided from component aircraft of aviation group units.

33–7. Communications to Subordinate Units, Aviation Group Headquarters

a. Radio. Headquarters and headquarters company provides stations (fig. 33–1) in the aviation group radio nets discussed below:

(1) *Aviation group command net (FM).* This net provides direct voice communications for command and control from the echelons of aviation group headquarters to the helicopter battalions and the general support (GS) aviation company. NCS is in the group tactical operations center (TOC).

(2) *Aviation group operations—intelligence net (FM).* This net is used for all traffic except comman traffic and links group headquarters with all component units. NCS is at group TOC.

(3) *Aviation group operations—intelligence net (RATT).* This secure net is used to transmit lengthy operations, intelligence, weather, and administrative traffic among all component units of the aviation group. NCS is at group TOC. Note that the group airborne CP may enter this net on a voice only basis if required.

(4) *Ground control approach radio nets.* The five ground control approach (GCA) teams provide the necessary communications and radar control equipment to operate five terminal landing facilities within the division area. Vehicular communications equipment organic to each team provides two FM and three UHF–AM voice radio sets. At each airfield terminal facility the radio sets are used for communications with a flight coordination center and local emergency, search, and final control operations. Normally, a GCA team will be located at the division base, one team at the instrumented airfield of each brigade, and a team as required for the support command or other areas.

(5) *Pathfinder direction radio nets.* FM voice radio sets organic to the pathfinder platoon are used by the four component pathfinder sections to provide aircraft enroute navigation assistance and air-landing or air-delivery facilities on, or over, friendly, enemy threatened, or enemy dominated areas.

b. Wire. A type wire system for internal and external aviation group use is shown in figure 33–2. Normally, the switching system shown is established at group base.

c. Messenger service. Messenger service is provided from aviation group headquarters to major subordinate and attached units. Where aviation group units are in support of distantly removed forces, air messenger service is used to the maximum extent practicable.

33–8. Radio Communications Centrals

The aviation group headquarters and headquarters company provides radio communications centrals which give additional voice radio capability to aircraft utilized by unit commanders and their staffs. Primarily these centrals are employed by the division commander and his staff, the aviation group commander and his staff, and other unit commanders of the division, such as the support command

commander, who are not authorized organic radio communications centrals. Specifically, these communications centrals will be utilized in the support aircraft provided by the general support aviation company, aviation group.

Section III. GENERAL SUPPORT AVIATION COMPANY COMMUNICATIONS

33–9. General

a. Mission. The GS aviation company (TOE 1–102) aviation group, airmobile division, has the mission to provide aviation support for the division headquarters, aviation group headquarters, support command, and all other divisional units not equipped with organic aircraft. In addition, the company will furnish electronic surveillance and acquire combat intelligence and target information for the airmobile division.

b. Capability. Consistent with its mission requirements, the company has the capability to provide:

(1) Aerial observation, reconnaissance, and surveillance of emeny areas utilizing visual, radar, infrared, and photographic means.

(2) Day and night operations during conditions of visual weather and limited capability for operations under instrumented weather conditions.

(3) Aircraft in the division for aerial command posts, control, liaison, reconnaissance, and radio retransmission.

(4) Aircraft, as required, to supplement medical air evacuation.

(5) Aerial photography consisting of daylight vertical, oblique, and panoramic photographic service.

(6) Limited battlefield illumination and local smoke screening in support of divisional combat units.

c. Employment. Normally, the GS aviation company operates from two locations in the division base area as follows:

(1) Company headquarters, surveillance platoon, utility platoon, and service platoon support the division from an *instrumented fixed wing airfield.*

(2) The remainder of the company operates and maintains the *division base heliport* providing helicopters to support the division commander and his immediate staff.

33–10. Communications to Higher Headquarters

a. Radio. The GS aviation company normally operates radio sets in the following higher-headquarters nets (fig. 33–3).

(1) Aviation group command net—FM.

(2) Aviation group operations–intelligence net—FM.

(3) Division G2 air information net—RATT.

(4) Aviation group operations–intelligence net—RATT.

b. Wire. Wire trunks to the GS aviation company switching central are provided as feasible either by the aviation group communication platoon or by the division signal battalion. Refer to figure 33–4.

c. Messenger Service. Echelons of the GS aviation company are normally located near enough to obtain direct messenger service from the division main signal center or from the division aviation group headquarters. Note that the GS aviation company is a prime provider of aircraft for division level messenger service.

33–11. Internal Communications, GS Aviation Company

a. Radio. Internal radio nets (fig. 33–3) operated by the GS aviation company are discussed below:

(1) *GS aviation company command net (FM).* This is the company commander's direct control link to all subordinate elements and aircraft of the company. NCS is in the vehicle of the flight operations officer.

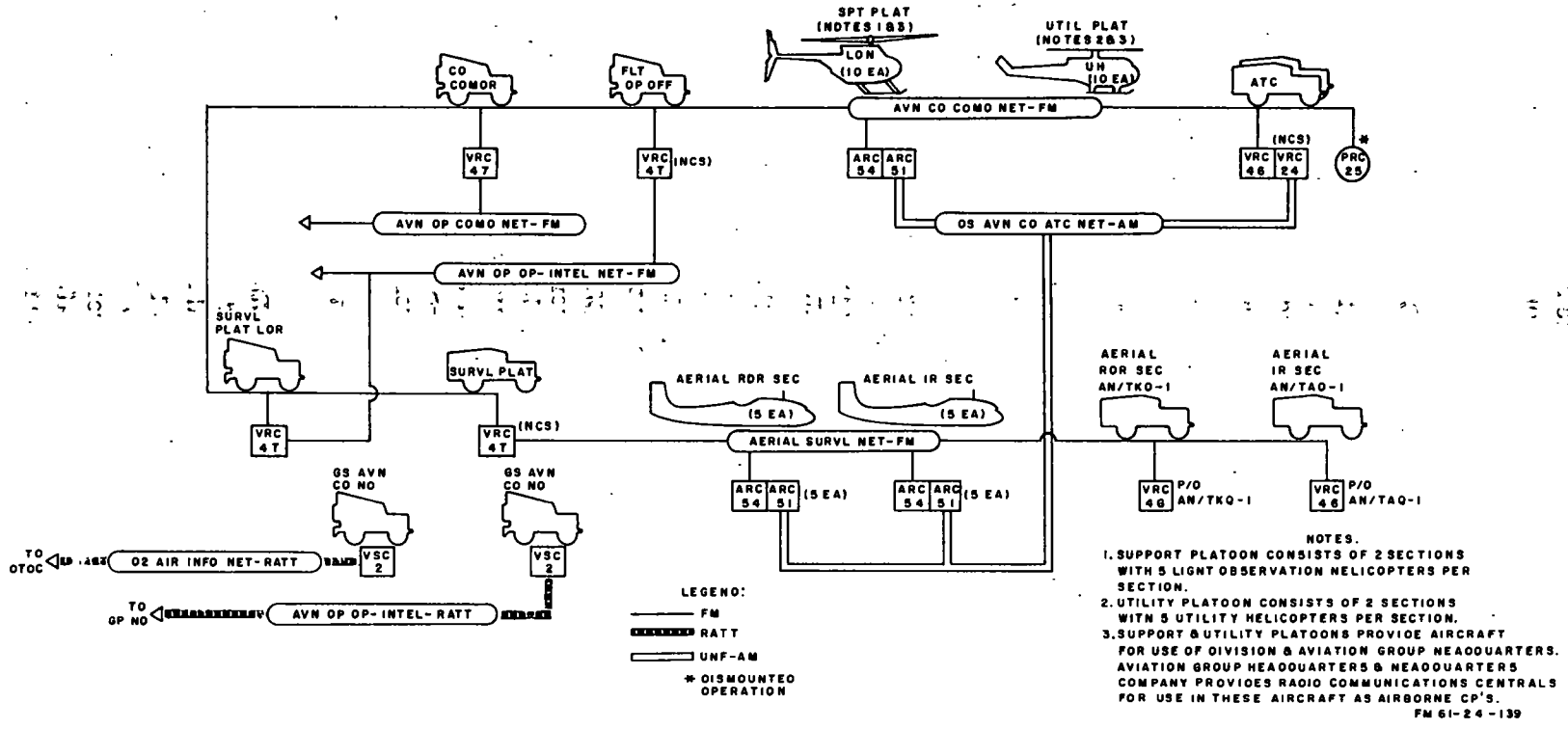


Figure 33–3. Type radio nets GS aviation company, aviation group, airmobile division.

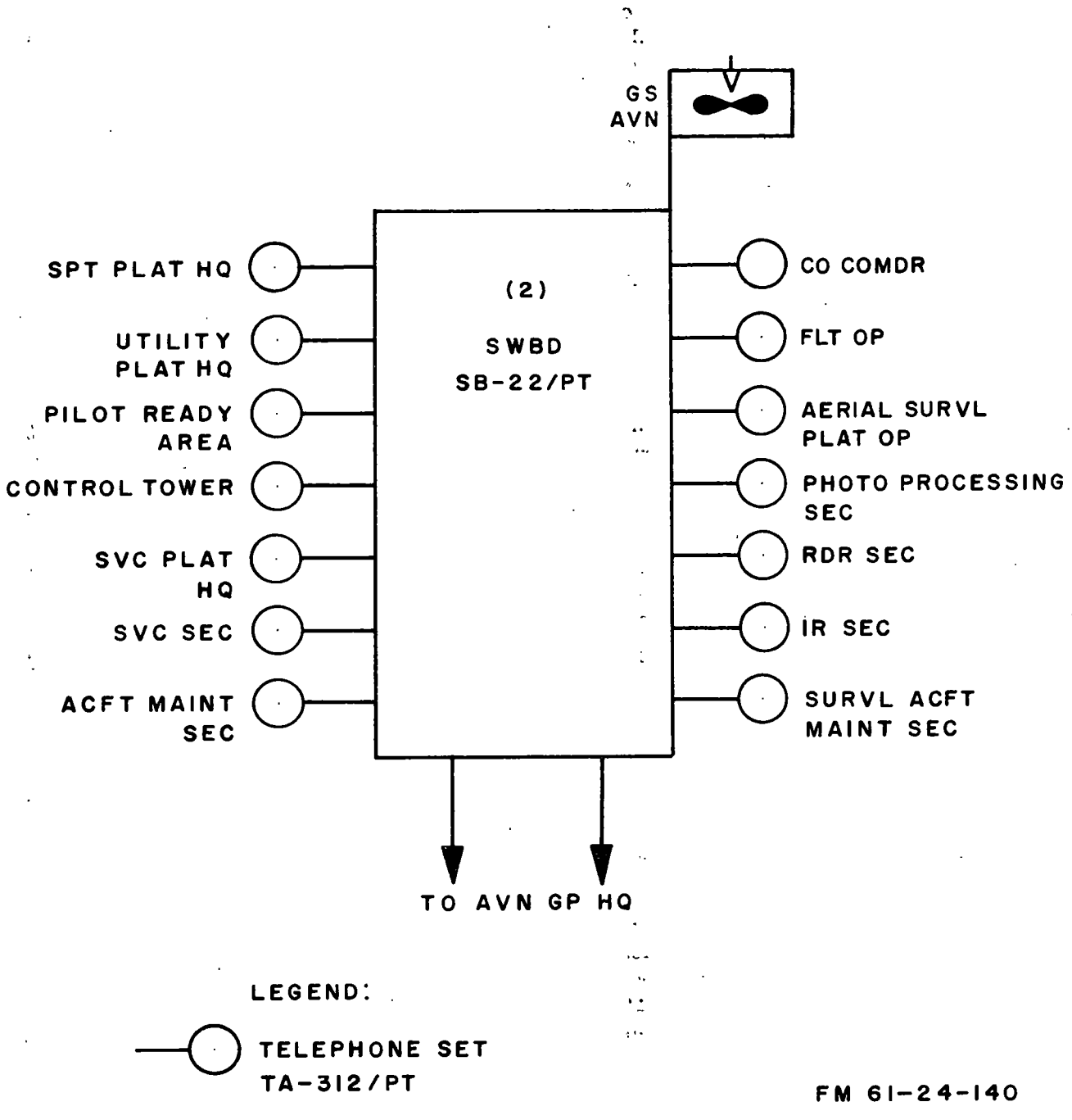


Figure 33–4. Type wire system, GS aviation company, aviation group, airmobile division.

(2) *GS aviation company air traffic control net (UHF–AM).* This net is constituted for the purpose indicated and includes two vehicular ground stations and all the aircraft organic to the company.

(3) *Aerial surveillance net (FM).* This net is used for surveillance purposes and includes a vehicular ground station as NCS at surveillance platoon headquarters.

b. Wire. A type wire system for the GS aviation company is shown in figure 33–4. Note that this diagram shows two switchboards at

one location, normally in the vicinity of the company CP. Another possibility would be to place one switchboard respectively at the instrumented fixed wing airfield and at the division base heliport with telephone subscribers assigned as appropriate.

Section IV. ASSAULT HELICOPTER BATTALION COMMUNICATIONS, AVIATION GROUP

33–12. Basic Considerations

a. Mission. Each of the two assault helicopter battalions of the aviation group has the mission to provide tactical mobility for combat troops, supplies, and equipment during the conduct of combat and airmobile operations.

b. Capabilities. Consistent with its mission requirement, an assault helicopter battalion has the capability to—

(1) Conduct operation in support of the division in forward areas of the division zone. (The support provided is continuous during visual and marginal weather conditions but limited under instrumental weather conditions.)

(2) Provide in a single movement airlift of the assault elements of one infantry battalion. (This is based on 80 percent per aircraft capability in the assault helicopter battalion.)

(3) Augment aeromedical evacuation from the immediate battlefield.

(4) Provide armed aerial escort within the combat zone and aerial fire support for combat units engaged on the ground.

c. Organization. Each of the two assault helicopter battalions (TOE 1–155) consists of a headquarters and headquarters company (TOE 1–156) an attack helicopter company (TOE 1–157), and three assault helicopter companies (TOE 1–158).

d. Characteristics of Communications. Because of the variety of missions performed, organic communications facilities must be flexible and mobile with heavy reliance on single channel radio. To carry out its mission, the assault helicopter battalion uses both ground and airborne communications, entering the radio nets of the supported land combat units wherever required.

33–13. Headquarters and Headquarters Company, Assault Helicopter Battalion

a. External Communications.

(1) *Radio.* Battalion headquarters radio stations (fig. 33–5) provided by the headquarters and headquarters company are listed below. (Refer to para 33–7 for a discussion of these nets.)

(*a*) Aviation group operations/intelligence net—FM.

(*b*) Aviation group command net—FM.

(*c*) Aviation group operations/intelligence net—RATT.

(*d*) Supported unit net—RATT. The battalion communication section operates a RATT station in the command net of the supported unit if required. This station may also be used in a division administrative logistics net for displacement, or as otherwise required.

(2) *Wire.* Wire or cable links from aviation group headquarters to assault helicopter battalion headquarters may be installed when these headquarters are adjacently located or when separating distances are secure and not too great in length. Under certain circumstances wire or cable links from assault helicopter battalion headquarters to supported units headquarters may also be installed where feasible. Refer to figure 33–6.

(3) *Messenger service.* Scheduled and special messenger service is provided by aviation group headquarters to assault helicopter battalion headquarters. Motor or air messengers are used as required.

b. Internal Communications.

(1) *Radio.* Battalion headquarters radio stations operating in internal battalion nets

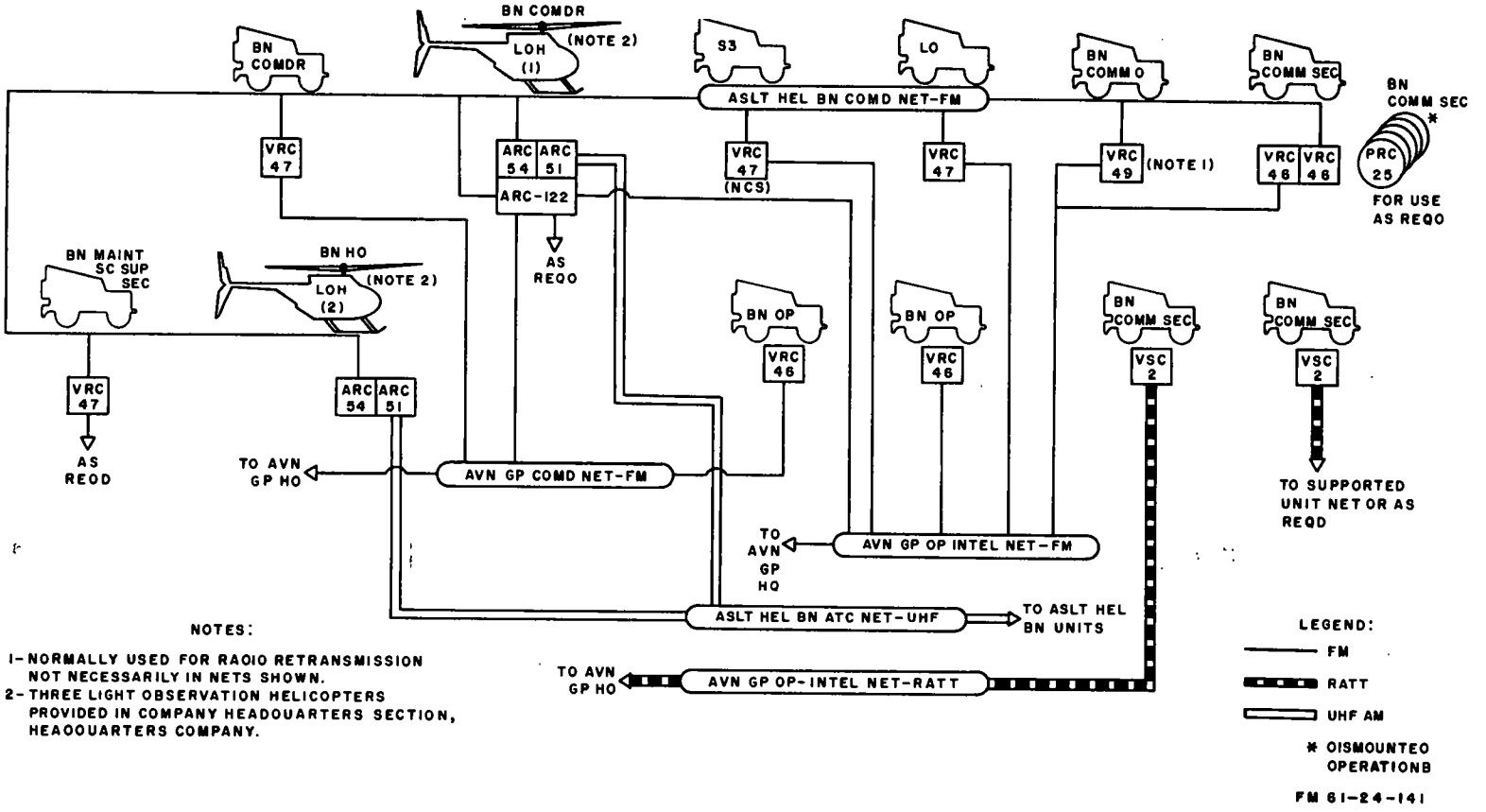


Figure 33–5. Type radio nets, assault helicopter battalion, aviation group, airmobile division.

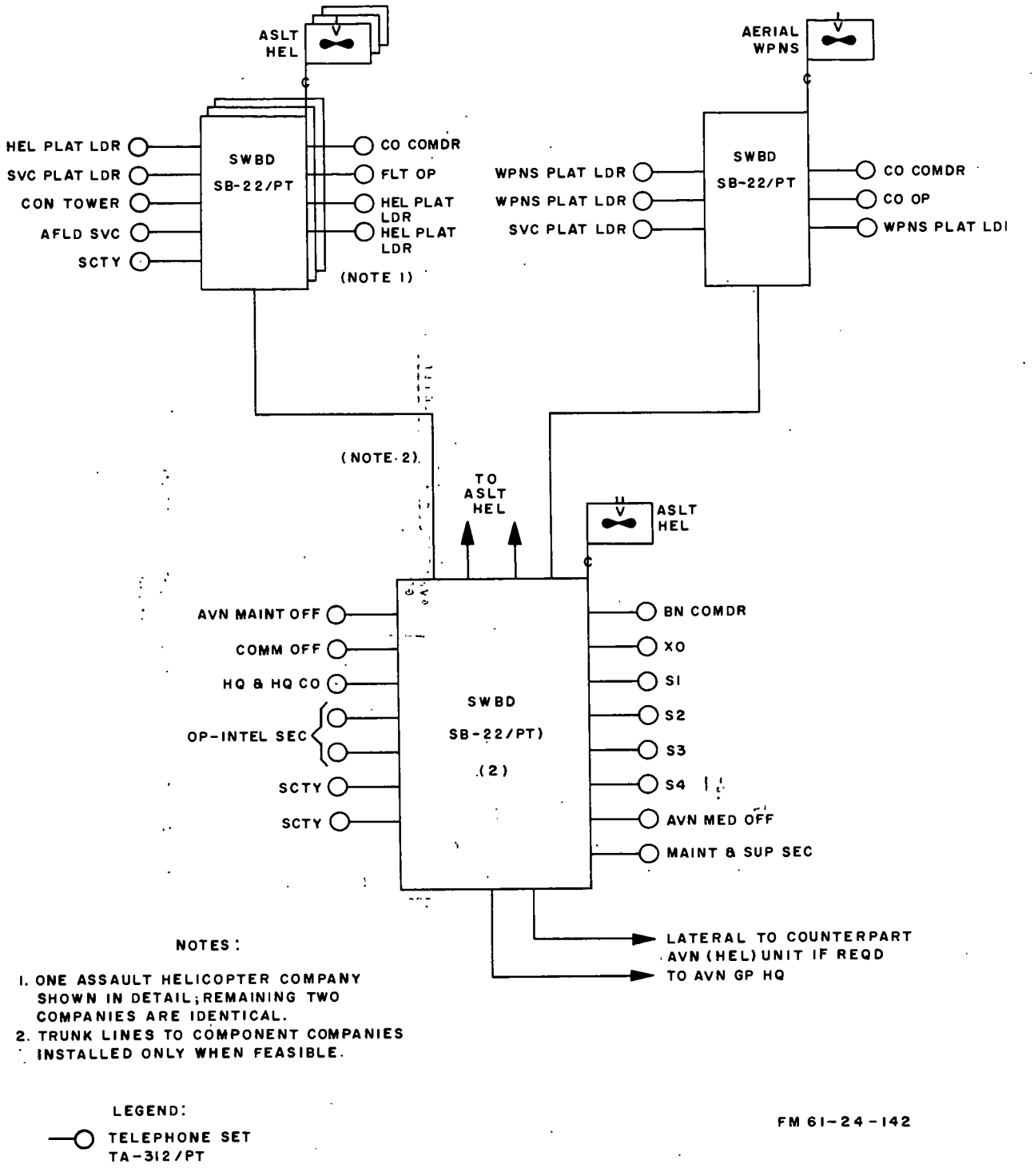


Figure 33-6. Type wire system, assault helicopter battalion, aviation group, airmobile division.

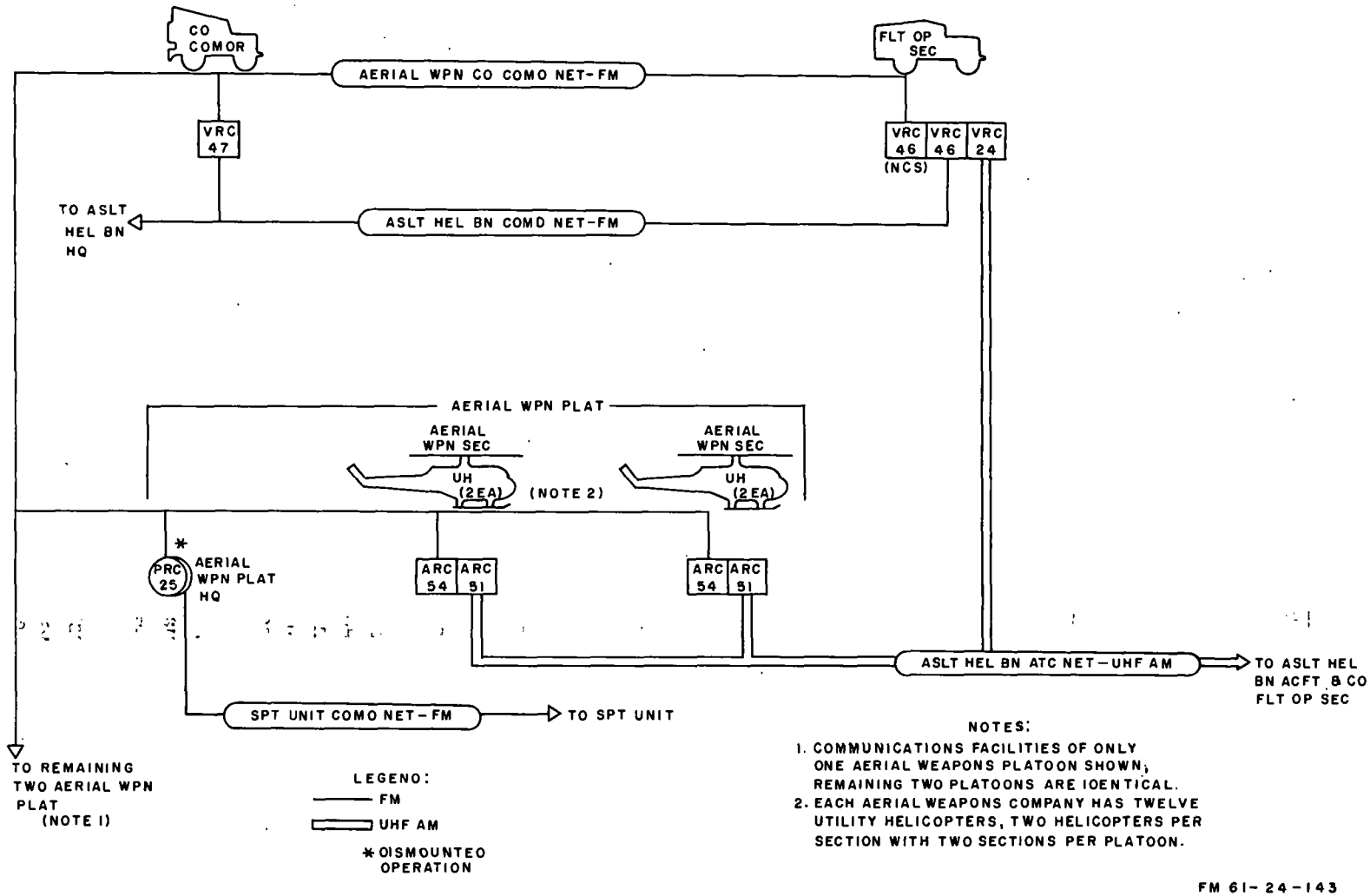


Figure 33-7. Type radio nets, aerial weapons company, assault helicopter battalion, aviation group.

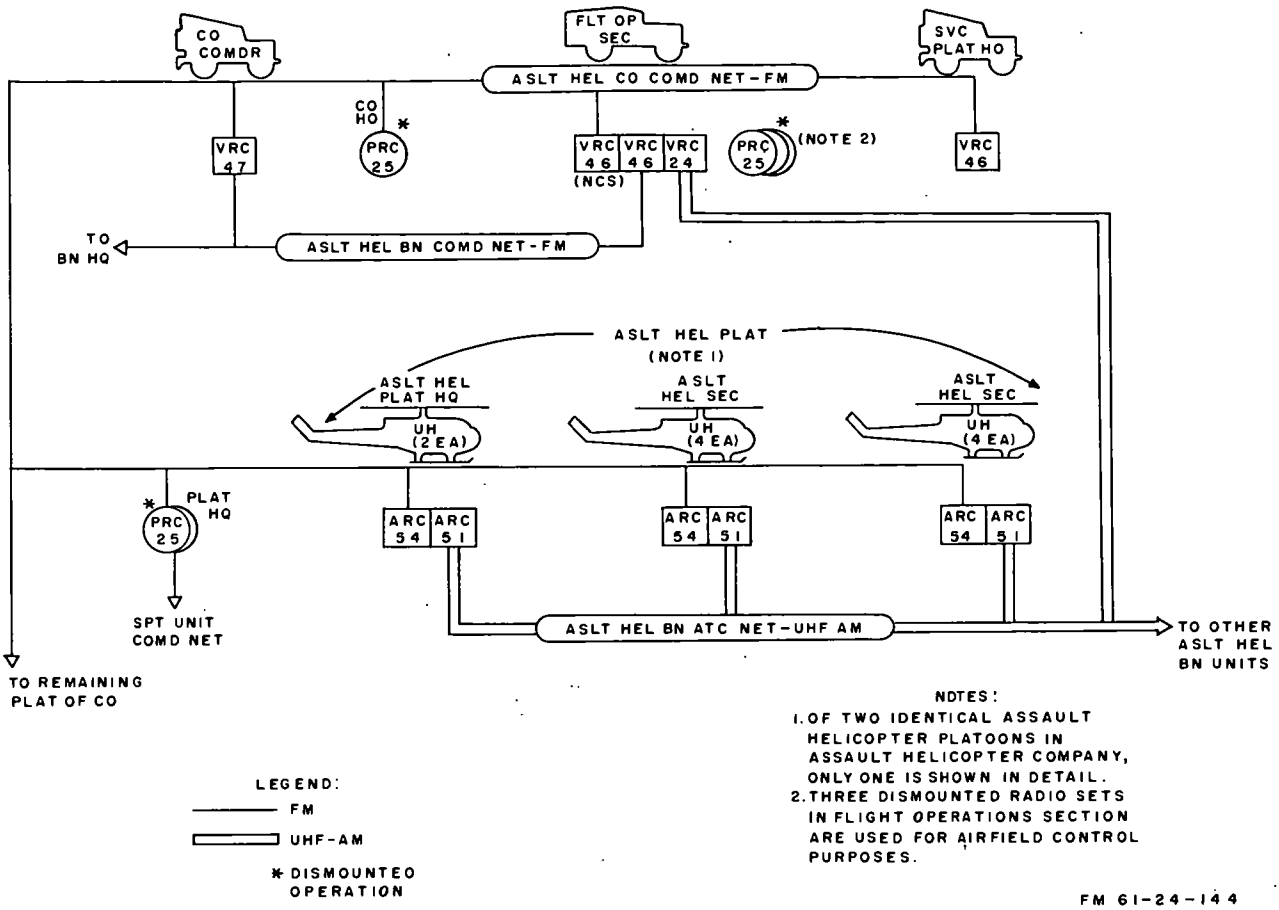


Figure 33–8. Type radio nets, assault helicopter company, assault helicopter battalion, aviation group, airmobile division.

provided by the headquarters company are described below (fig. 33–5).

(*a*) *Assault helicopter battalion command net—FM.* This net is primarily used as a direct command link from the battalion commander to staff officers and company commanders. The operations section normally functions as the NCS.

(*b*) *Assault helicopter battalion ATC net—UHF–AM.* The battalion headquarters station is normally in the aircraft of the battalion commander.

(2) *Wire.* Normally wire is installed within the battalion CP and, when possible, from battalion headquarters to the helicopter companies. Refer to figure 33–6. Under certain appropriate conditions wire may be laterally installed to adjacent helicopter units and to supported infantry units.

(3) *Messenger service.* Ground messenger service is used extensively in or near the battalion base. Organic aircraft are used for longer runs and dissemination of the larger items of classified information to subordinate units. Scheduled ground or air messenger service is established when locations are fixed and the amount of traffic warrants.

33–14. Attack Helicopter Company, Assault Helicopter Battalion

a. Mission and Capability. The attack helicopter company has the mission to provide security for airmobile forces and to participate in offensive, defensive, and delaying actions as

part of a highly mobile combined arms team. To carry out its mission, the company has the capability to provide armed aerial escort, participate in semi-independent operations, and deliver effective aerial suppressive fires against hostile enemy ground forces.

b. Radio. The aerial weapons company maintains radio stations in the following radio nets (fig. 33–7).

(1) Assault helicopter battalion command net—FM.

(2) Assault helicopter battalion ATC net —UHF–AM.

(3) Attack helicopter company command net—FM. This net is used for internal command and control of all company operations. NCS is normally in the vehicle of the company flight operations section.

(4) Support unit command net.

c. Wire. A wire system for internal company use is shown in figure 33–6. When practical, the battalion communications section may extend wire links to the attack helicopter company switchboard for connection into the battalion wire system.

33–15. Assault Helicopter Company, Assault Helicopter Battalion

a. Mission and Capability. The assault helicopter company has the mission to provide tactical mobility for combat troops, supplies, and equipment for the division during combat operations. To carry out its mission, the company has the capability to provide—

(1) Continuous operations in support of units in the combat zone during visual and marginal weather conditions. (This support is limited during instrumental weather conditions.)

(2) Airlift for one rifle company with its infantry supporting weapons. (This is a one-lift capability based on an 80 percent availability of organic company aircraft.)

(3) Air movement of troops, supplies, and equipment within the combat zone.

(4) Augmentation to aeromedical evacuation from the immediate battlefield.

b. Radio. Each of three assault helicopter companies provides radio stations in the following nets (fig. 33–8).

(1) Assault helicopter battalion command net—FM.

(2) Assault helicopter battalion ATC net (UHF)–AM.

(3) Assault helicopter company command net—FM. This net is used for internal command and control of company operations with NCS in the vehicle of the company flight operations section.

(4) Medical evacuation net.

c. Wire. A wire system for internal assault helicopter company use is shown in figure 33–6. When feasible, the battalion communications section may extend a wire link to the assault helicopter company switchboard.

Section V. ASSAULT SUPPORT HELICOPTER BATTALION COMMUNICATIONS, AVIATION GROUP

33–16. Basic Considerations

a. Mission. The assault support helicopter battalion of the aviation group has the mission to provide tactical air movement of combat troops, supplies, and equipment in airmobile operations within the combat zone.

b. Capability. To carry out its mission, the assault support helicopter battalion has the capability to—

(1) Provide continuous operations during visual weather conditions and limited operations during instrument weather conditions.

(2) Provide, in a single lift, airlift of the assault elements of two infantry battalions (960 combat equipped troops), the combat elements of three 105mm batteries, 90,000 pounds

of cargo or equivalent logistical load, or any combination thereof. These figures will vary in accordance with aircraft availability and density altitude.

(3) Augment aeromedical evacuation as required.

c. Organization. The assault support helicopter battalion (TOE 1–165) consists of a headquarters and headquarters company (TOE 1–166) and three assault support helicopter companies (TOE 1–167).

d. Characteristics of Communications. The air movement of troops, supplies, and equipment requires maximum use of fragmentary mission-type orders, rapid reaction to the continuously changing tactical situation, and a reliable but flexible communications system with emphasis on the use of single channel radio. Primarily, therefore, the battalion depends on portable, mobile, and airborne radio sets, but, where feasible, also makes maximum use of the existing division communications system.

33–17. Headquarters and Headquarters Company, Assault Support Helicopter Battalion, Aviation Group

a. External Communications. Battalion headquarters radio stations (fig. 33–9) provided by the battalion headquarters and headquarters company are listed below. (Refer to para 33–9 for a discussion of these nets.)

(1) Aviation group command net—FM.

(2) Aviation group operations/intelligence net—FM.

(3) Aviation group operations/intelligence net—RATT.

(4) Supported unit net—RATT. If required, the assault support helicopter battalion headquarters operates a RATT station in the command net of the supported unit for lengthy traffic. This station, provided by the battalion communications section, may also be used in such division nets as administrative logistics or it may be required in displacement of use in assault group operations intelligence nets when the assault support helicopter battalion is operating in two headquarters echelons.

(5) Supported unit command net—FM. The S3 operates a radio in this net throughout the period of direct support.

(6) Forward support elements—FM. The battalion S4 communicates with the division forward support elements within voice radio range by entering this net.

(7) *Wire.* Wire or cable links from aviation group headquarters to assault support helicopter battalion headquarters are installed when these headquarters are not widely separated and the distance between is relatively secure. Wire links to supported units headquarters may also be installed by the battalion communications section where feasible (fig. 33–10).

(8) *Messenger service.* Scheduled and special messenger service is maintained by aviation group to the assault support helicopter battalion headquarters. Motor or air messengers are used as required.

b. Internal Communications.

(1) *Radio.* Battalion headquarters radio stations operating in internal battalion radio nets (fig. 33–9) are described below:

(a) *Assault support helicopter battalion command net—FM.* Tactical command and control from the battalion commander to the commanders of subordinate and attached elements are provided by this net. The operations section normally functions as the NCS.

(*b*) *Assault support helicopter battalion aircraft control (LR) command net—AM.* This AM voice SSB net is used for long range communications from battalion headquarters to both ground and airborne stations of the assault helicopter support companies. The battalion headquarters NCS is operated from the S3 vehicle.

(2) *Wire.* Normally, wire is installed within the battalion CP (fig. 33–10) and, when possible, from battalion headquarters to each of the assault support helicopter companies. When such circuits are possible, a direct circuit is established from the S3 of the battalion to the flight operations section of each company.

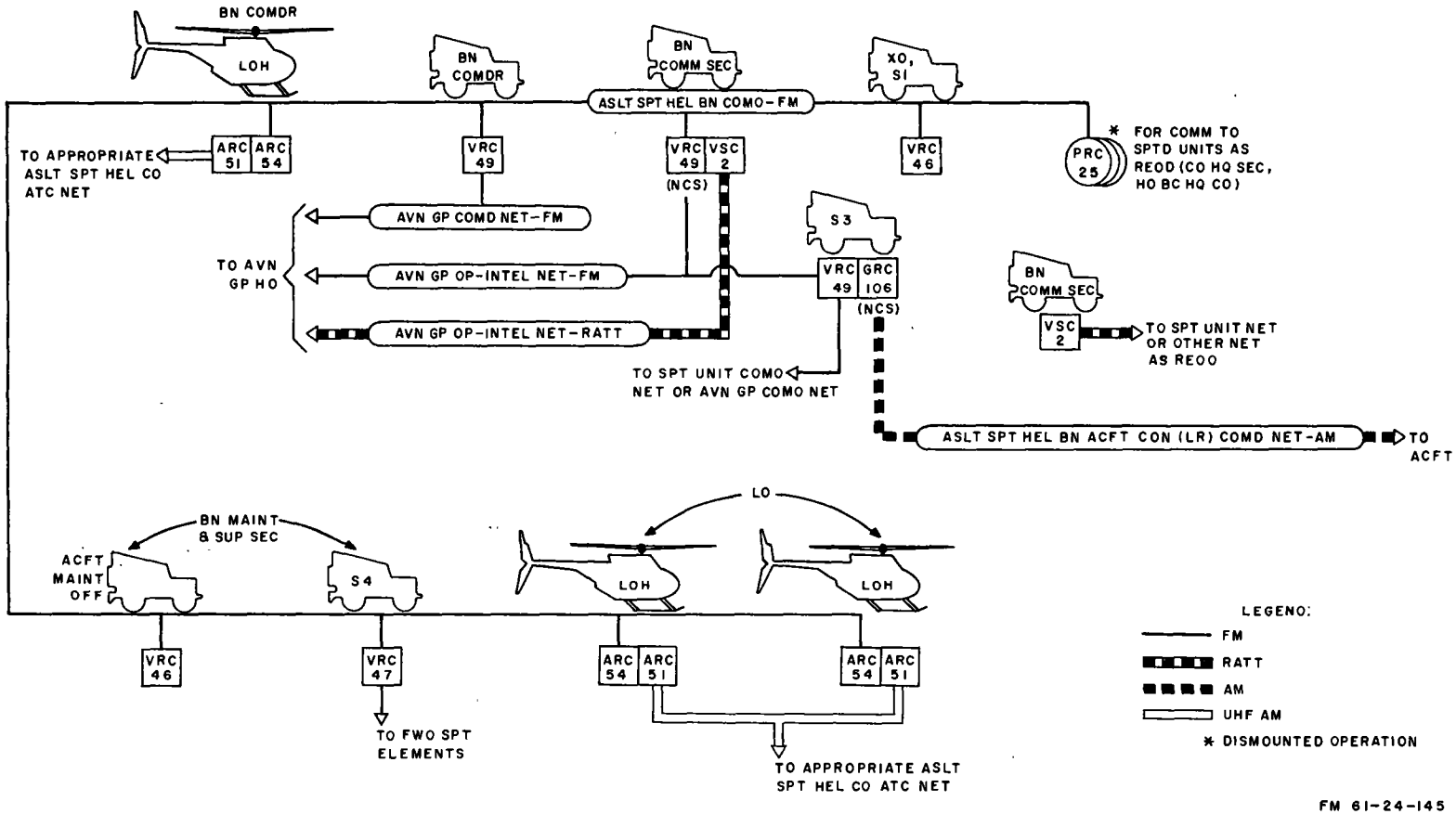


Figure 33-9. Type radio nets, assault support helicopter battalion, headquarters aviation group, airmobile division.

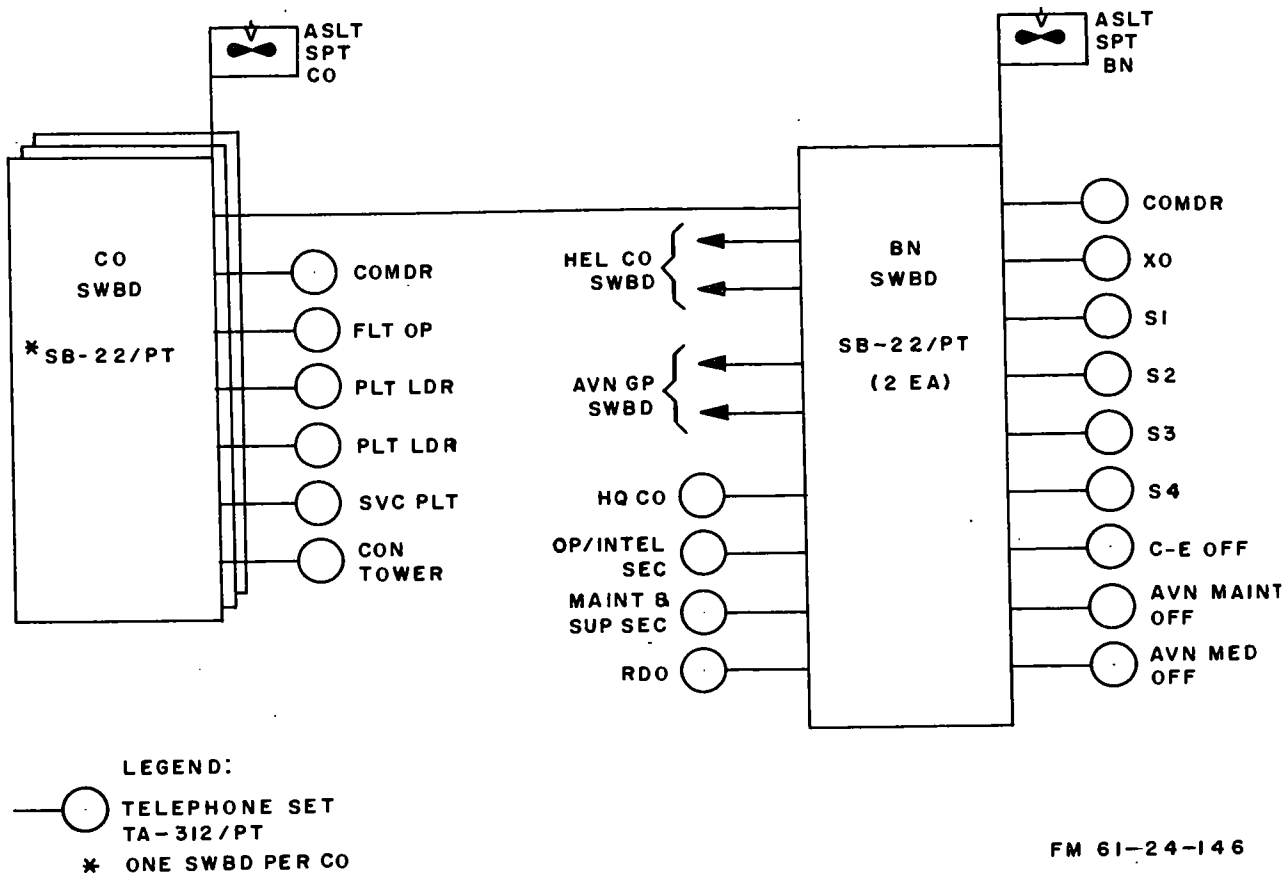


Figure 33–10. Type wire system, assault support helicopter battalion, aviation group.

(3) *Messenger service.* The assault support helicopter battalion uses the division scheduled motor messenger service when possible. In addition, it may establish unscheduled motor messenger and air messenger service to its component companies. If practical, battalion may provide a scheduled air messenger service when CP locations (both company and battalion) are fixed and the amount of traffic warrants.

33–18. Assault Support Helicopter Company, Assault Support Helicopter Battalion

a. Mission and Capability. Each of the three assault support helicopter companies has the mission to provide tactical mobility for combat troops, supplies, and equipment of the division during the conduct of combat and airmobile operations. To carry out its mission, the company has the capability to—

(1) Provide continuous operations during visual and marginal weather conditions and limited operations under instrument weather conditions.

(2) Provide, in a single lift, airlift of the assault elements of two infantry companies (320 combat-equipped troops), the combat elements of one 105mm howitzer battalion, 30,000 pounds of cargo or equivalent tactical load, or any combination thereof. These figures will vary in accordance with aircraft availability and density altitude.

(3) Augment aeromedical evacuation as required.

b. Radio. Each assault support helicopter company provides radio stations in the following nets (fig. 33–11):

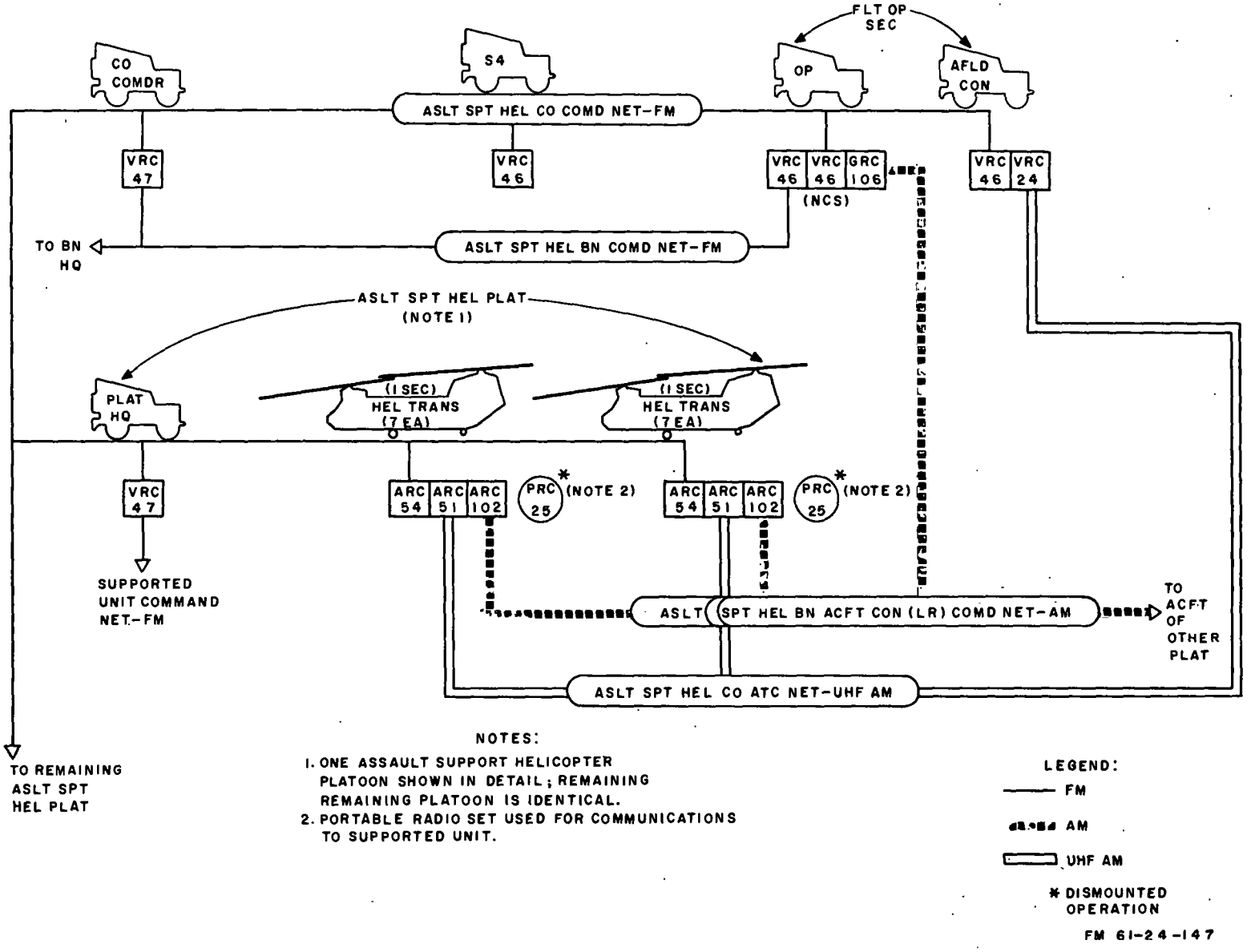


Figure 33-11. Type radio nets, assault support helicopter company assault support helicopter battalion, aviation group, airmobile division.

(1) Assault support helicopter battalion command net—FM.

(2) Assault support helicopter battalion aircraft control (LR) command net—AM.

(3) Assault support helicopter company ATC net—UHF–AM. The NCS is in the flight operations section for this internal net.

(4) Assault support helicopter company command net—FM. This net net is used for internal command and control of company operations. The NCS is in a vehicle of the flight operations section.

(5) Supported unit command net—FM. Each of the two assault support platoons monitors in this net. Also note that each helicopter section has a portable ground radio set to operate with supported units as required.

(6) Medical evacuation net.

c. Wire. A wire system for internal company use is shown in figure 33–10. When feasible, the battalion communications section may extend a wire link to each assault support helicopter company switchboard for connection to the battalion wire system.

CHAPTER 34

ENGINEER BATTALION

(STANAG 2043)

Section I. GENERAL INFORMATION

34–1. Mission

a. The mission of the engineer battalion is to increase the combat effectiveness of the airmobile division by performing general and special engineering tasks. If required, the battalion will accomplish infantry operations incident to their engineer mission, probably with a greater frequency than engineer units of other type divisions.

b. Consistent with its assigned mission, the battalion has the specific capability of:

(1) Accomplishing engineer tasks, and limited additional engineer support to the extent possible.

(2) Making expedient bridge repairs.

(3) Destroying equipment, supplies, and material by burning or demolition.

(4) Establishing road blocks and barriers by emplacement of obstacles, including mines and booby traps, and demolition of bridges and structures.

(5) Providing atomic demolition munition (ADM) support when required by attachment of TOE 5–500 teams.

(6) Providing engineer reconnaissance and intelligence service.

(7) Providing personnel and equipment for purification and dispensing of potable water.

(8) Providing technical assistance to division troop units in construction of obstacles, fortifications, barrier emplacement, camouflage, deception devices, and other engineer matters.

(9) Providing infantry combat missions when required.

(10) Furnishing assistance in the assault of fortified positions and assault demolitions of obstacles.

(11) Performing organizational maintenance on organizational equipment.

34–2. Composition of Engineer Battalion

The engineer battalion of the airmobile division consists of the following:

a. One headquarters and headquarters company (TOE 5–216).

b. Three combat engineer companies (TOE 5–217).

34–3. Organization for Communications

a. Headquarters and Headquarters Company. A communications-electronics officer is assigned to battalion headquarters to serve on the engineer battalion special staff as principal advisor to the battalion commander on communications matters. The C–E officer normally exercises operational control over the engineer battalion communication section of headquarters company; this section provides engineer battalion headquarters communications and, within organic capabilities, extends communications to subordinate battalion and attached elements. An enlisted communications chief is assigned for direct supervision of the section.

b. Combat Engineer Company. The combat engineer company is authorized one field radio mechanic. However, organic voice radio sets, telephones, and switchboards are operated by company personnel in addition to other duties.

c. Type Duties. Refer to chapter 2 for type duties of communications personnel, both officer and enlisted.

34–4. Characteristics of Communications

The airmobile engineer battalion uses a conbination of radio, wire, visual, sound, and messenger communications depending upon the conditions encountered. Whenever possible, wire systems will be employed but the widely dispersed nature of the engineer operations conducted will compel greater reliance on single channel radio. In most airmobile situations, the combat engineer companies will enter the communication network of the brigade or other element supported.

Section II. ENGINEER BATTALION HEADQUARTERS COMMUNICATIONS

34–5. Headquarters and Headquarters Company, Engineer Battalion, Airmobile Division.

This company provides an engineer special staff section for the airmobile division in addition to command and staff personnel for the engineer battalion. To supplement the battalion command function, the company also furnishes communications, reconnaissance, mainteance, mess, supply, and unit level medical support.

34–6. Communications to Higher Headquarters

a. Radio. Normally, engineer battalion headquarters and headquarters company provides radio sets in the following higher headquarters nets with stations as shown in figure 34–1.

(1) Division command operations net (FM).

(2) Division operations-intelligence net (FM).

(3) Division command net No. 1—RATT.

(4) Division administrative-logistical net No. 4—RATT.

b. Wire. Where possible, engineer battalion headquarters will be linked by wire to the division support command or division base switchboard.

c. Messenger. Scheduled messenger service to the engineer battalion headquarters will be provided from the support command or division base signal centers. Special messenger service, utilizing aircraft as necessary, will be used when required.

34–7. Communications to Subordinate Units

a. Radio. Headquarters and headquarters company provides radio stations (fig. 34–1) in the engineer battalion command net (FM). This voice net provides a direct command link from battalion headquarters to all component, supported, and attached units with NCS at battalion headquarters.

b. Wire. Figure 34–2 illustrates a type wire system showing telephone locals at engineer battalion headquarters and interconnections from battalion headquarters to the combat engineer companies. However, the widely dispersed nature of typical airmobile operations may make such a system impractical. A combat engineer company, for example, may be distantly located in direct support of a brigade or other equivalent size unit making unfeasible the installation of wire trunks from battalion to company.

c. Messenger: Message center service is provided by the battalion communications section. Although no messengers are allocated to this section, service to component companies is provided by utilizing available personnel on an additional duty basis. Also routine messenger service to engineer companies may be included in the regular runs operated by the division sig-

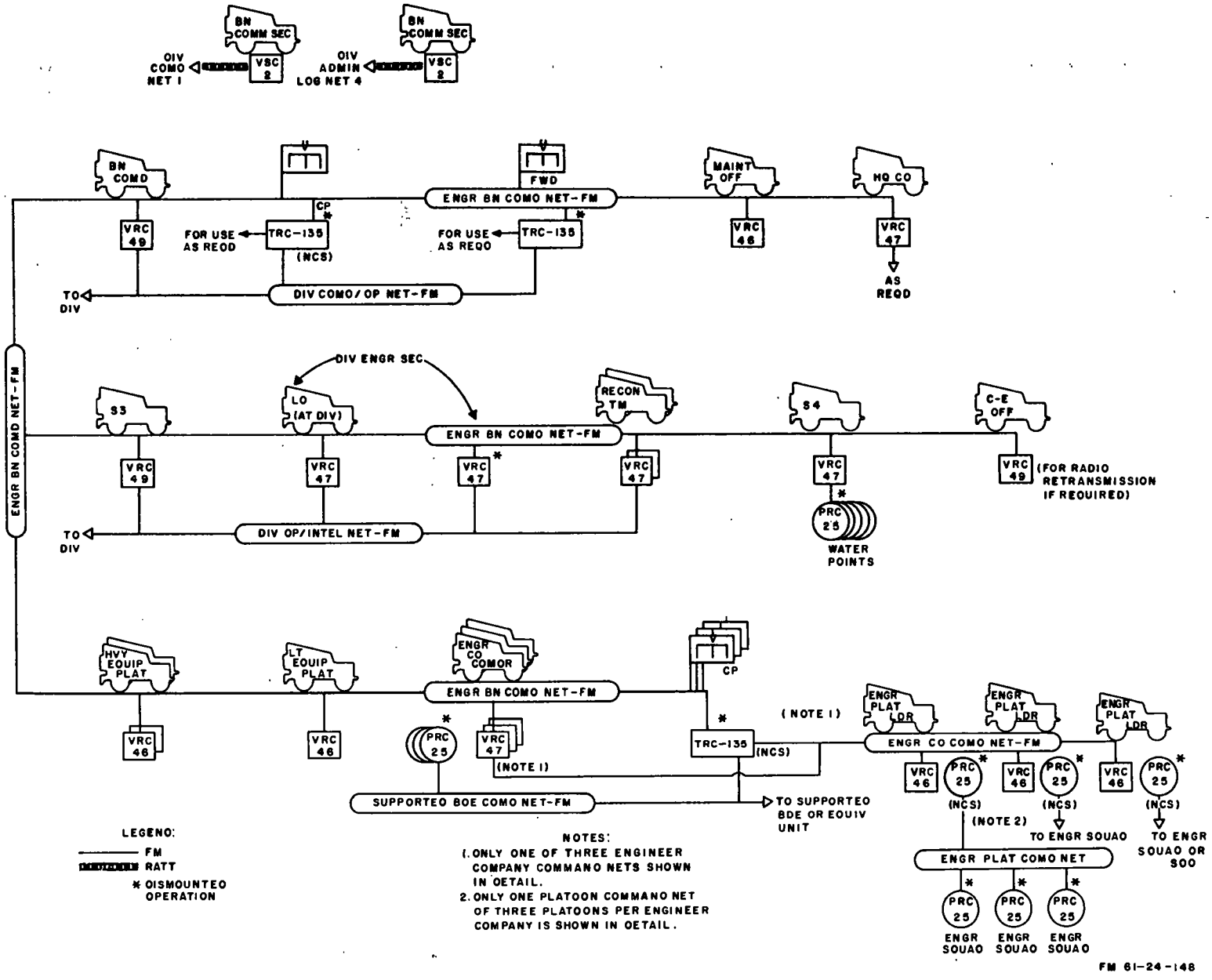
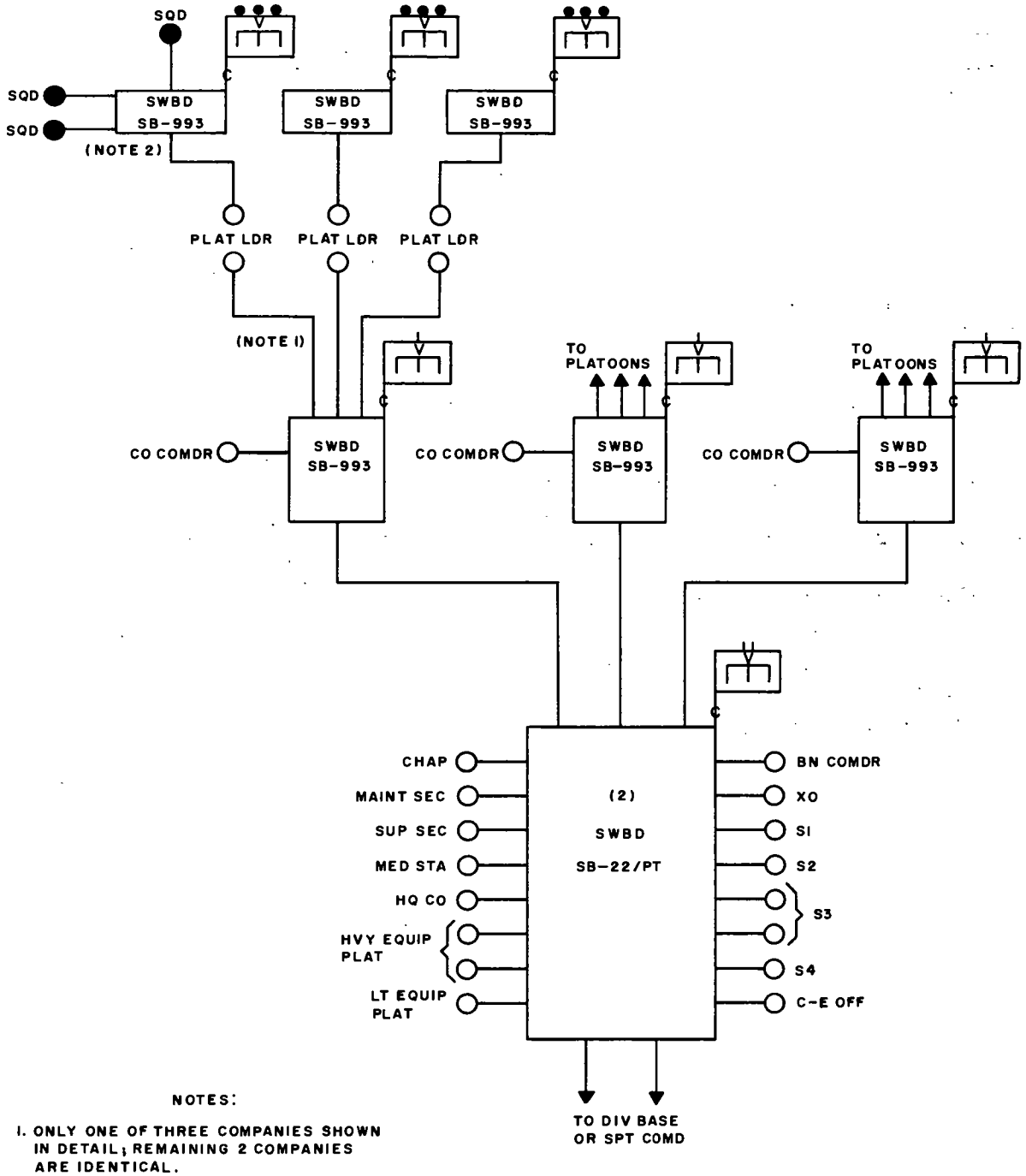


Figure 34-1. Type radio nets, engineer battalion, airmobile division.



NOTES:

1. ONLY ONE OF THREE COMPANIES SHOWN IN DETAIL; REMAINING 2 COMPANIES ARE IDENTICAL.
2. ONLY 1 OF 3 COMPANY PLATOONS SHOWN IN DETAIL; ALL OTHER PLATOONS ARE IDENTICAL.
3. WIRE TRUNK LINES INSTALLED ONLY WHEN DISTANCES ARE NOT EXCESSIVE. TRUNKS TO SUPPORTED UNITS INSTALLED WHEN FEASIBLE.

LEGEND:

- TELEPHONE SET TA-312/PT
- TELEPHONE SET TA-1/PT; PART OF REEL EQUIPMENT C-11

FM 61-24-149

Figure 34-2. Type wire system, engineer battalion.

nal battalion to some central major subordinate headquarters such as a brigade. From this point, bulk message material may be picked up by the addressee or transported to the addressee by the available local message delivery service.

Section III. COMBAT ENGINEER COMPANY COMMUNICATIONS

34–8. Mission and Capability

a. Mission. The combat engineer company has the mission to provide combat support to the engineer battalion by accomplishing general and special engineer tasks. To a limited degree, each company undertakes infantry missions, usually incident to engineer tasks, when so required.

b. Capability. The capabilities of the engineer company are given in paragraph 34–1. Refer to TOE 5-217 for further information.

34–9. Company Communications

a. Radio. The combat engineer company maintains stations (fig. 34–1) in the following radio nets:

(1) Engineer battalion command net (FM).

(2) Engineer company command net (FM). This is an internal voice net for direct command and control of company operations with NCS at the company CP.

(3) Engineer platoon command net (FM). This is an internal net for command and control platoon operations. There are three of these platoon nets per company with NCS at platoon headquarters.

(4) Supported brigade or supported unit (FM). Each company maintains FM voice radio contact with the unit being supported, usually an infantry brigade. The company station is at engineer company CP.

b. Wire. A type wire system for a combat engineer company is shown in figure 34–2.

CHAPTER 35

MILITARY POLICE COMPANY COMMUNICATIONS (STANAG 2043)

35-1. Mission and Capability

a. Mission. The military police company (MP) has the mission to provide military police support for the airmobile division.

b. Capability. Consistent with its mission, the military police company has the capability to—

(1) Provide the division provost marshal and the provost marshal section to division headquarters.

(2) Establish 18 motor patrols or 27 traffic control posts, or combinations thereof, to operate over a 24-hour period when the component three military police platoons are not involved in other duties.

(3) Provide local and internal security to division main and other division headquarters echelons.

(4) Operate as required a central division prisoner of war (PW) collecting point and forward division PW collecting points in support of committed brigades as required. In connection with this, the central division collection point will evacuate PW's from the brigade collection points, as required.

(5) Prevent and investigate crimes within the division area.

(6) Control the circulation of individuals in connection with traffic control operations.

(7) Provide escort and security of high priority shipments by motorized traffic patrols.

(8) Provide protection for designated persons and property.

(9) Enforce military law, orders, and regulations.

(10) Assist in rear area security operations in conjunction with other military police activities.

35-2. Organization

a. Basic Organization. To carry out its mission, the airmobile division MP company is organized as follows:

(1) Division PM section to provide the division provost marshal's staff support.

(2) Company headquarters to provide the commander and personnel to control company operations.

(3) Two MP platoons to provide general MP support.

(4) One MP platoon, airborne, to provide general airmobile MP support.

(5) One security platoon for local and internal security to the division command post.

b. Organization for Communications. There is no specific section primarily for communications. The company headquarters provides an enlisted communications chief and a field radio mechanic. Designated personnel of the company operate the company switchboard and the mobile radio sets in addition to regularly assigned duties.

35-3. Radio Communications (fig. 35-1)

a. External. The division provost marshal and MP company headquarters operate FM voice radio stations in the division operations intelligence net.

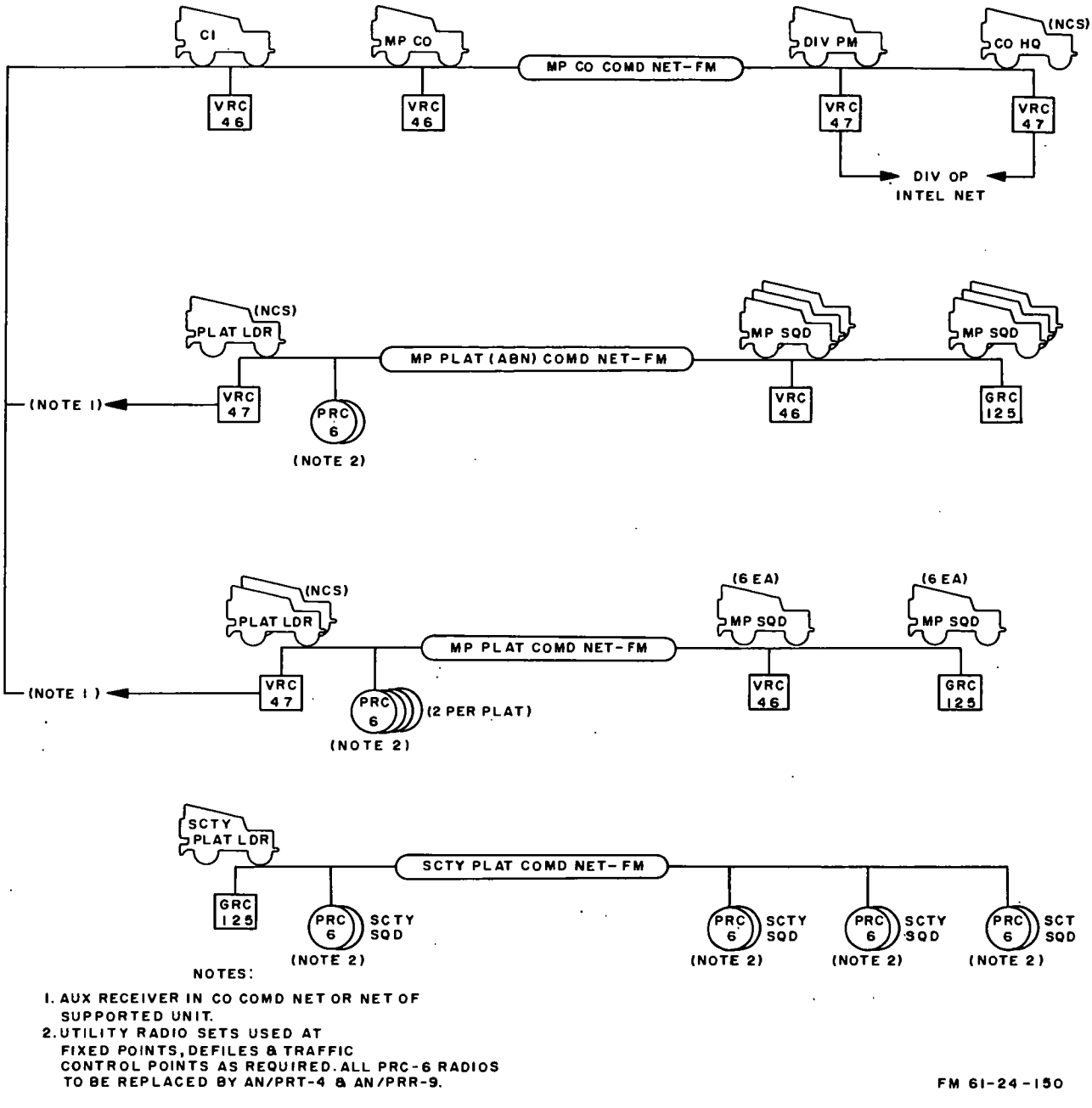


Figure 35–1. Type radio nets, military police company airmobile division.

b. Internal. Internal radio nets operated by the MP company are identified below:

(1) MP company command net (FM). This net provides internal command, control, and administrative logistics communications for the MP company. NCS is in the company headquarters vehicle.

(2) Platoon command nets (FM). Each MP platoon maintains an FM voice net for control of platoon operations. NCS for each net is in the platoon leader's vehicle.

35–4. Wire Communications

a. A type wire system for internal operations of the MP company is shown in figure 35–2. MP platoons or elements thereof, when

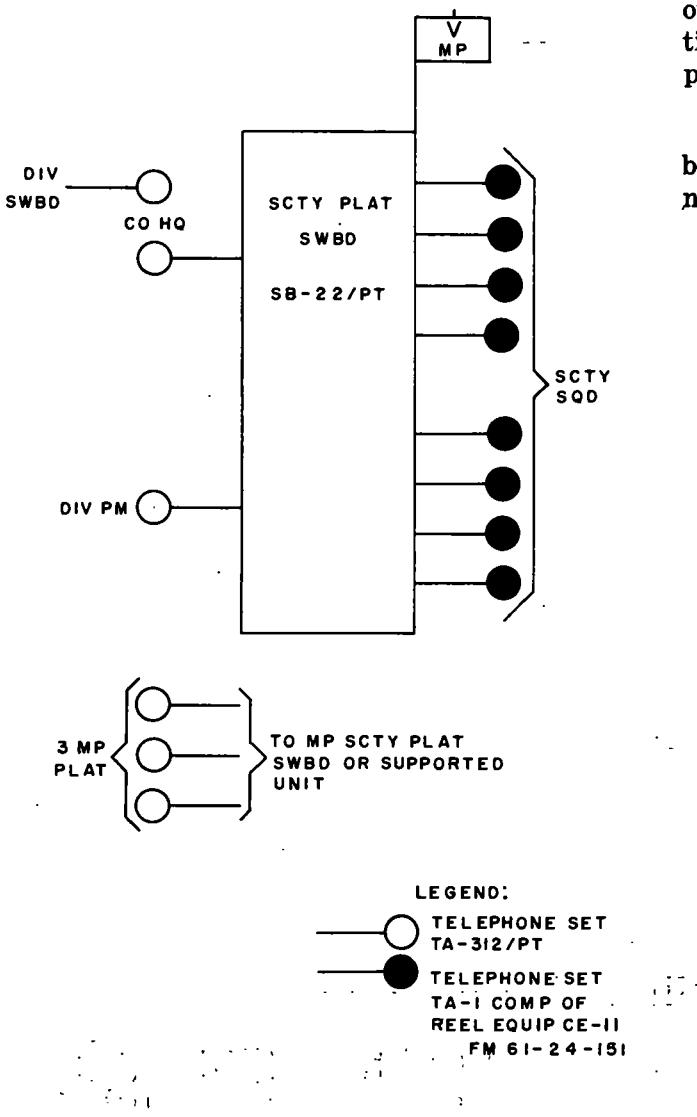


Figure 35–2. Type wire system, military police company, airmobile division.

on missions detached from the company, may tie into the switchboard of the unit being supported.

b. The MP company headquarters switchboard should be provided a trunk line to the nearest signal center.

CHAPTER 36

DIVISION SUPPORT COMMAND COMMUNICATIONS (STANAG 2043)

Section I. GENERAL INFORMATION

36–1. Mission

The support command of an airmobile division has the mission to provide division level combat service support to all assigned or attached elements of the division. Exceptions to this, however, include military police service, communications, construction, and certain administrative services provided by special staff sections in the administration company. The specific mission and capabilities of component units of airmobile division support command (DISCOM) with emphasis on communications will be identified in the subsequent sections of this chapter.

36–2. Composition of Airmobile Division Support Command

Support command of an airmobile division consists of the following organizations:

a. Headquarters, headquarters company and band (TOE 29–42).

b. Supply battalion (TOE 29–95).

c. Transportation aircraft maintenance and supply battalion (TOE 55–405).

d. Maintenance battalion (TOE 29–85).

e. Medical battalion (TOE 8–25).

f. Administration company (TOE 12–77).

36–3. Organization for Communication

a. Support Command Operations Platoon, Command Operations Company, Airmobile Signal Battalion. The Division support command headquarters receives external communications support from the support command operations platoon, command operations company, division signal battalion. The facilities provided include message center, motor messenger cryptography, teletypewriter, telephone switching, single channel radio, and multichannel radio (para 28–4). The platoon leader acts as the support command signal officer and supervises the installation, operation, and maintenance of the communications facilities at the support command headquarters.

b. Headquarters, Headquarters Company, and Band. This company serving support command headquarters, is authorized no signal officer or separate communication platoon or section. Communication service is provided at support command headquarters by the division signal battalion (*a* above). The company, however, is provided an enlisted communications chief and radio telephone operators for support command headquarters communications on an internal support command basis.

c. Supply Battalion. This battalion has no TOE designated C–E staff officer, communication platoon, or communication section. Battalion headquarters is authorized an enlisted battalion communication chief, two switchboard operators, a field radio mechanic, and a wireman. Component supply units of the battalion have no TOE designated communication specialists; therefore, the limited organic communication equipment in these companies is operated by assigned personnel in addition to their other duties.

d. Transportation Aircraft Maintenance and Supply Battalion. A communications section is authorized to the battalion headquarters and headquarters company; this section is supervised by the battalion communication chief. Other component companies of the battalions are authorized enlisted communications specialists, such as radio operators, a wireman, and switchboard operator for use as required. Selected personnel may be assigned communications duties as additional tasks.

e. Maintenance Battalion. The maintenance battalion has no TOE designated C–E staff officer, communication platoon, or communication section. Headquarters and the main support company of the battalion are authorized an enlisted battalion communication chief radio operators, a switchboard operator, and a wireman. Personnel of other component units of the battalion operate organic communication equipment in addition to other duties.

f. Medical Battalion. The medical battalion has no TOE designated C–E officer, communication platoon, or communication section. Headquarters and support company of the battalion is authorized an enlisted battalion communications chief, radio teletypewriter operators, and switchboard operations to operate organic equipment. Component medical companies of the battalion assign personnel to operate organic communication equipment in addition to other duties.

g. Administration Company. Normally, the administration company receives communication support from the rear echelon support platoon of the division signal battalion. The company switchboard is operated by organic personnel in addition to other duties.

Section II. HEADQUARTERS, HEADQUARTERS COMPANY, AND BAND

36–4. Mission

The headquarters, headquarters company and band of the airmobile division has the mission to—

a. Provide command and control of division support command units, both organic and attached, with the exception of the division special staff elements of the administration company.

b. Assure adequate service support to the division and attached units in assigned areas of responsibility.

c. Provide technical supervision of all combat service support functions in those functional areas represented by its operating units.

d. Provide suitable music for military functions, formal concerts, and recreational activities

36–5. Organization of Headquarters, Headquarters Company and Band

To carry out its mission, this unit is organized as follows:

a. Command Headquarters. This element provides the headquarters and staff to control operations of the division support command of the airmobile division.

b. Company Headquarters. This element provides the commander and enlisted assistants to control internal company operations.

c. Forward Service Support Sections. Each of these sections, which are unique to airmobile operations, has the mission to control the flow of supplies and supply carrying aircraft at each forward brigade base of operation. Each section consists of the headquarters element, movement control team, and an airfield control team. A section has the mission to locate within and coordinate all combat service support in a particular brigade base.

d. Movement Control Section. This section has the mission to coordinate from support command headquarters the flow of supplies, usually by aircraft, to all operating units assigned or attached to the airmobile division.

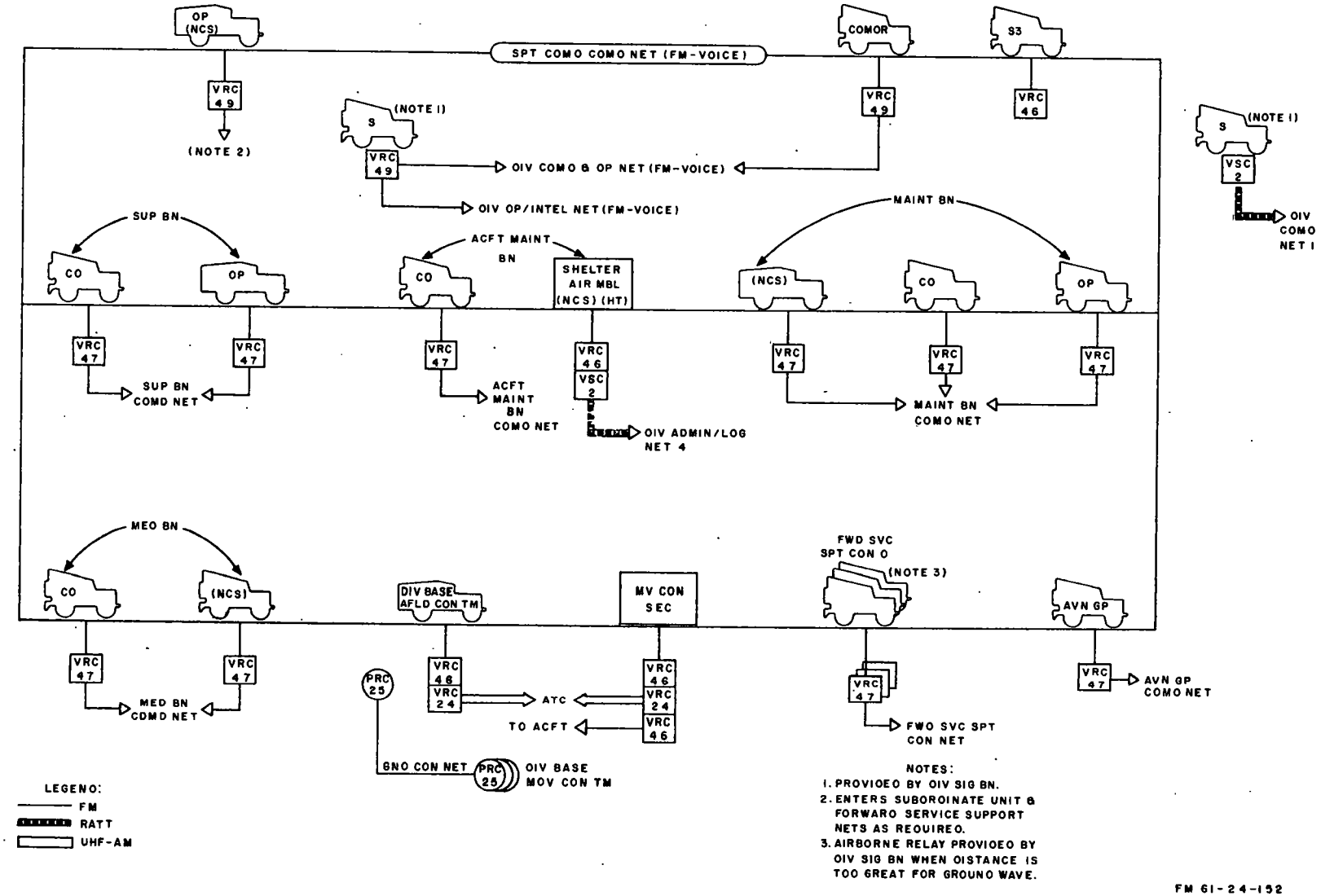


Figure 36–1. Type division support command command radio nets.

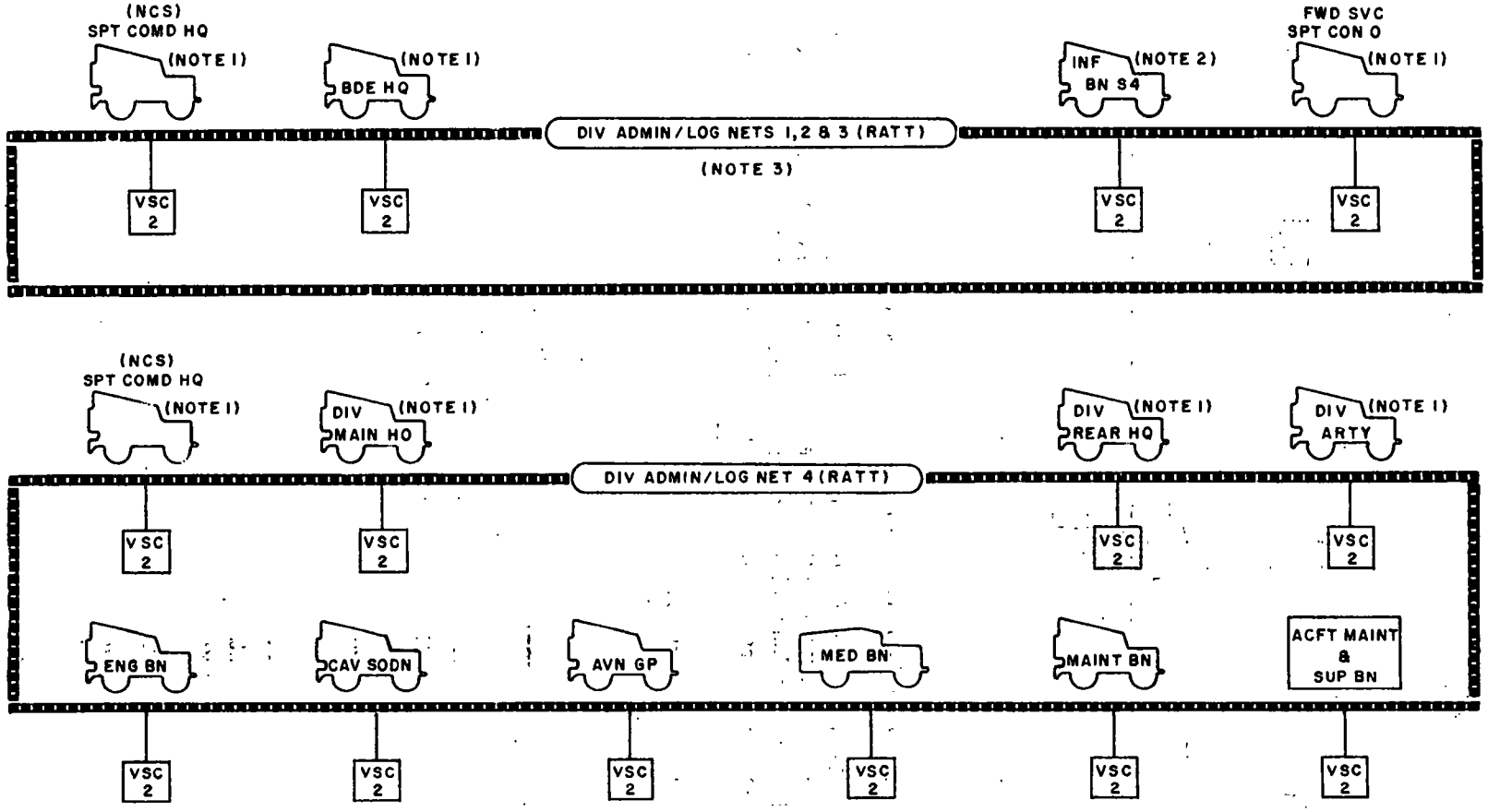


Figure 36-2. Type division administration/logistical radio nets.

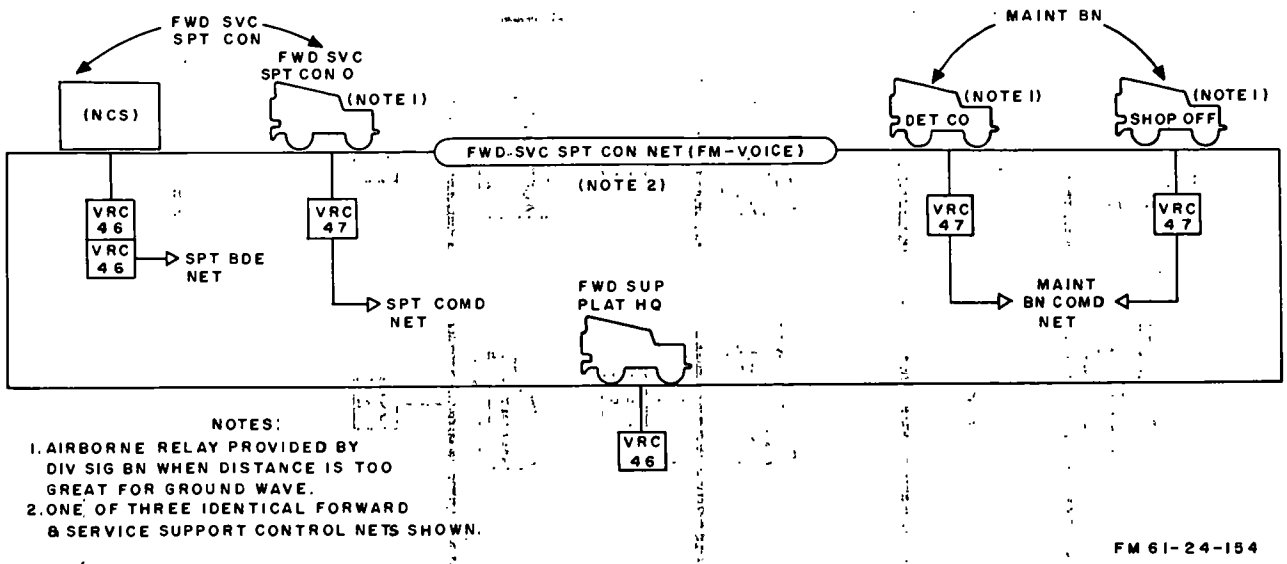


Figure 36–3. Type forward service support control radio net, airmobile division.

e. Division Base Movement and Airfield Control Section. This section controls supporting aircraft operating from the division base airfield. It consists of a movement control team and an airfield control team.

f. Band. This element provides military, concert and recreational music and will perform such additional duties as may be required.

36–6. Communications to Higher Headquarters

a. Radio. Headquarters, headquarters company and band normally has radio stations in the following higher headquarters nets:

(1) *Division command/operations net (FM) and operations/intelligence net (FM).* Refer to figure 36–1 and paragraphs 28–11*a* and *b*. Note that the division signal battalion provides radio stations in these two nets from the same vehicle at support command headquarters.

(2) *Division command net No. 1 (RATT).* The support command headquarters station is provided by the division signal battalion (fig. 36–1 and para 28–11).

(3) *Division administrative/logistics nets No. 1, 2, 3, and 4 (RATT).* Separate stations for each of these nets are provided at support command headquarters by the division signal battalion (fig. 36–2 and para 28–11*e*). In each net, the support command stations serve as NCS.

b. Wire and Radio Relay. Telephone and teletypewriter circuit access into the division communications system (fig. 28–4) is provided primarily through the multichannel radio and carrier terminal facilities provided by the support command operations platoon in the support command signal center. Normally, due to extended distances between units, installation of wire and cable circuits is not feasible; therefore, their use is limited primarily to interconnections within CP or base camp complexes.

c. RWI. The RWI station at division support command is installed, operated, and maintained by personnel of the support command operations platoon.

d. Messenger Service. Messenger service at support command and from higher headquarters is provided by the division signal battalion.

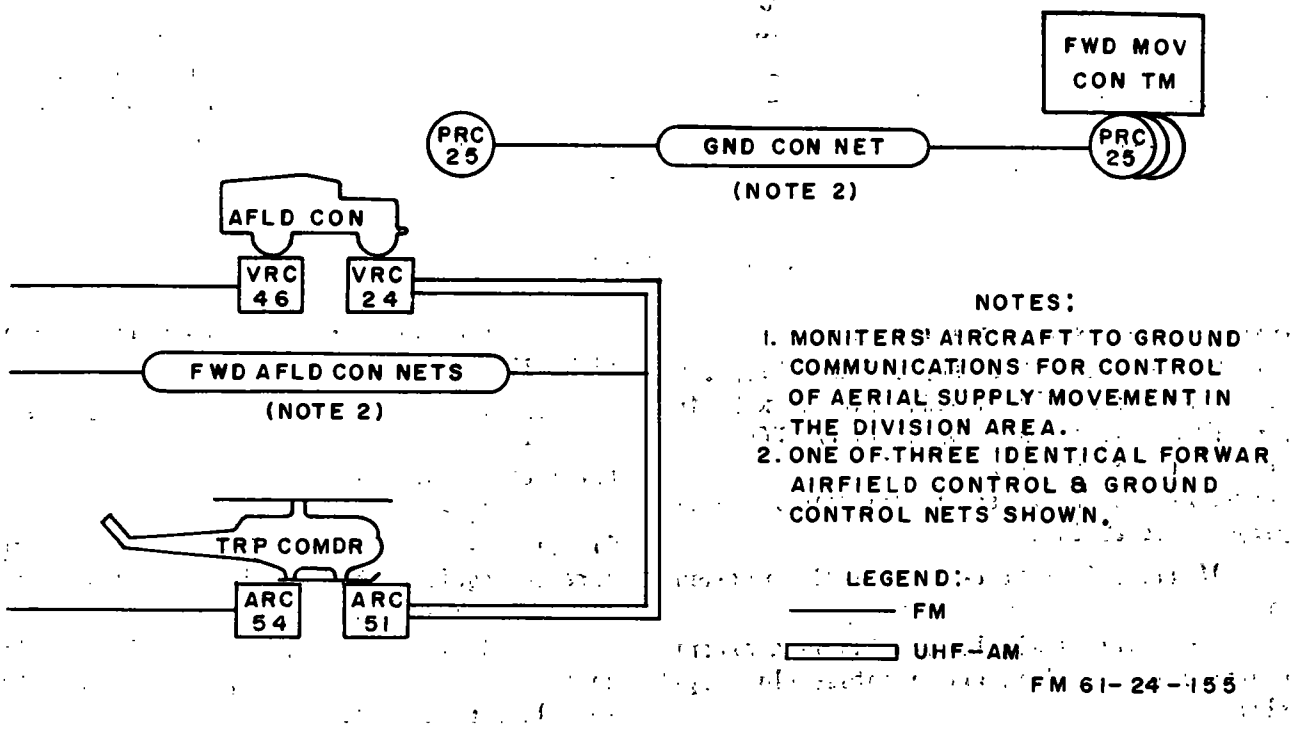


Figure 36–4. Type forward airfield and ground control radio nets, airmobile division.

36–7. Internal Communications

a. Radio.

(1) *Support command command net (FM).* This net (fig. 36–1) provides a direct channel of communications from the support command commander to units under his control. Support command headquarters, headquarters company and band provides radio stations for the support command commander, support command operations (NCS), the S3, and the movement control section.

(2) *Forward service support control nets No. 1, 2, and 3 (FM).* These nets (fig. 36–1) are operated by each of three forward support control sections to provide support communications within the brigade bases of operation. Each net may be entered by any unit to request logistic support (fig. 36–3). Support command headquarters, headquarters company and band provides the NCS radios and the vehicular radio set for the element commander.

(3) *Supported Brigade Net (FM).* Each forward support control section operates a radio station in the appropriate supported brigade radio net (fig. 24–1 and 36–3).

(4) *Forward Airfield Control Nets (UHF–AM and FM).* Each of the three forward service support control sections has a forward airfield control team equipped with UHF AM and FM voice radio stations provided by the headquarters, headquarters company and band in the brigade base area. The radios are used for control of aerial supply movement into the brigade base area. The AM UHF radio set is used primarily for air-to-ground operations; the FM set is used either for ground-to-ground or aircraft-to-ground operations; both radio sets in effect guard aircraft air-to-ground communications (fig. 36–4).

(5) *Ground control nets (FM).* Ground control nets associated with each airfield control team are operated at the division base and each brigade base airfield. All portable radio sets are provided by the support command headquarters, headquarters company, and band and are organic to the various airfield control teams (fig. 36–1 and 36–4).

(6) *Division base airfield control nets (UHF AM and FM).* These nets operate at division base as described in (5) above. Division headquarters sets are provided by the movement control section and the division base airfield control team (fig. 36–1).

b. Wire System. Internal telephone switching and teletypewriter service for DISCOM is provided by the division signal battalion (fig. 28–7). The headquarters, headquarters company and band has a limited number of telephones for internal use.

Section III. SUPPLY BATTALION

36–8. Organization and Mission

a. Organization. The supply battalion, airmobile division (TOE 29–95) is organized into a headquarters and service company (TOE 29–96), a supply company (TOE 29–97), and a quartermaster aerial equipment support company (TOE 10–67).

b. Mission. The battalion has the mission to—

(1) Provide all classes of supply, except repair parts, medical, and cryptographic supplies.

(2) Maintain the division reserve of supplies for which responsible.

c. Capabilities. When at full strength, and consistent with its mission requirements, the battalion has the 24-hour capability to—

(1) Receive, provide temporary storage for, and issue Class I, II, III, IV, and V supplies and equipment—exceptions to this are repair parts, medical and cryptographic supplies.

(2) Operate supply and distribution points for the classes of supply handled in the airmobile division forward and brigade areas.

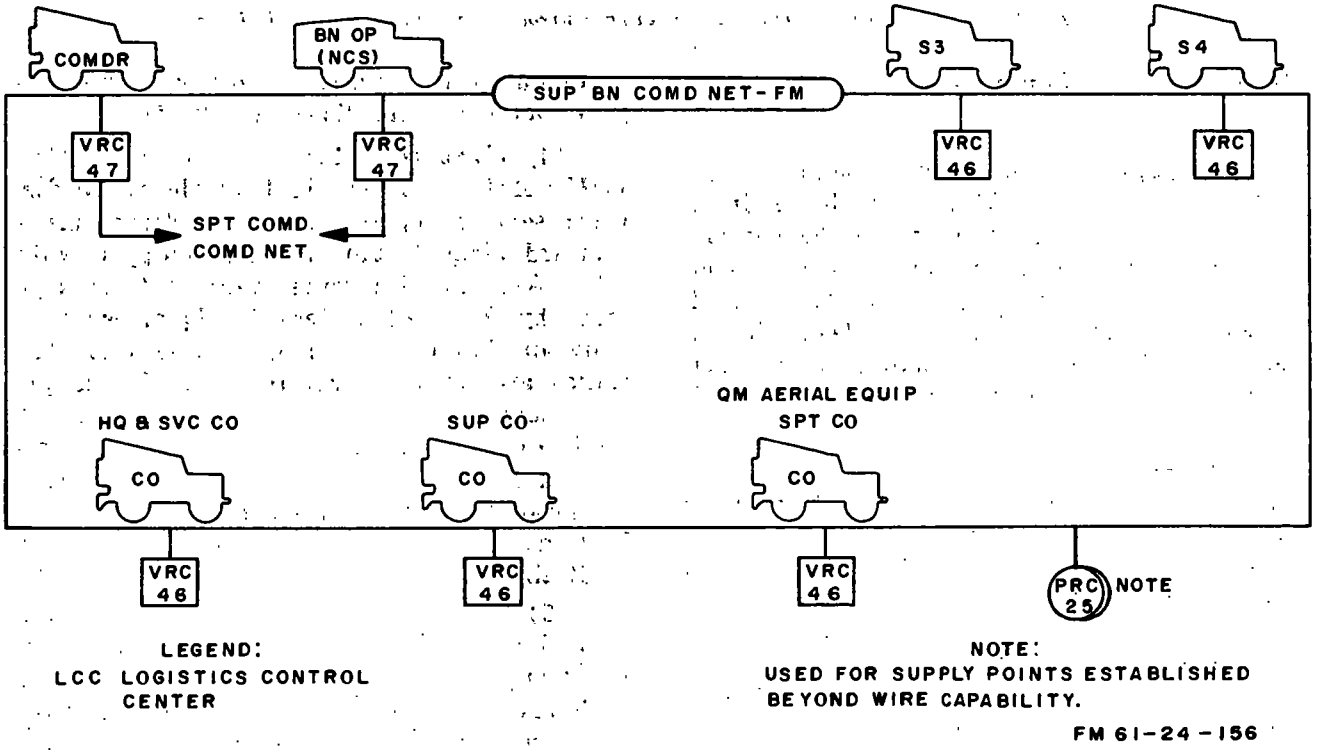


Figure 36–5. Type radio nets, supply battalion.

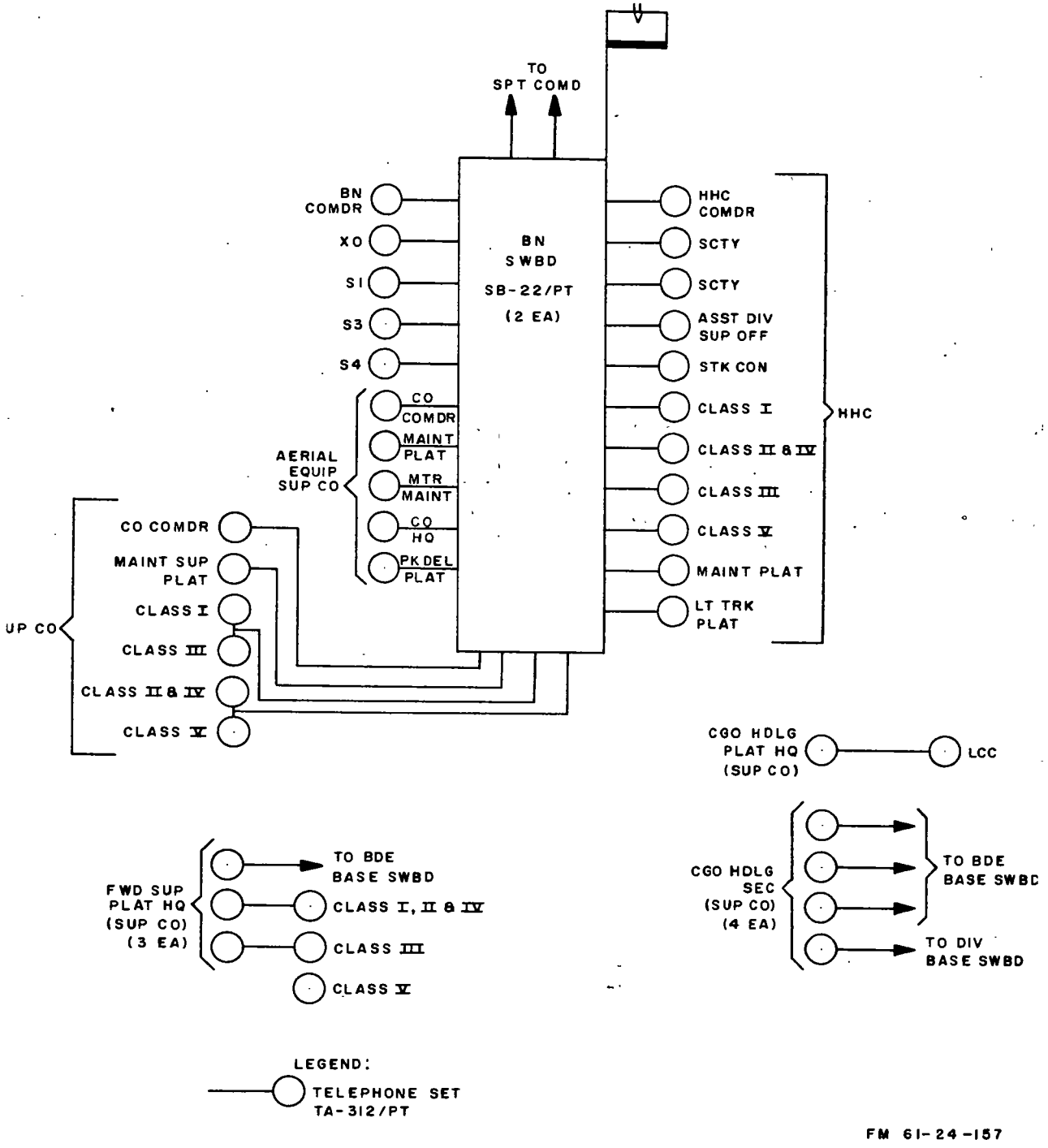


Figure 36–6. Type wire system, supply battalion, airmobile division.

(3) Operate the division rear area supply point for all classes of supply except as indicated in (1) above.

(4) Provide air delivery equipment support for airborne elements of the division.

(5) Advise the division on food service matters.

(6) Provide purchase and contract services as required.

36–9. Radio Nets

The supply battalion operates radio stations in the following nets:

a. Division Support Command Command Net (FM). Supply battalion radio sets are in the vehicle of the battalion commander and the battalion operations vehicle (fig. 36–1).

b. Forward Service Support Control Nets (FM). There is one forward servnce support control net per brigade. Operating in each net are radio stations at the three forward supply platoons of the supply company. The forward supply platoons operate from the respective brigade bases (fig. 36–3).

c. Supply Battalion Command Net (FM). The supply battalion command net with its organizational components is shown in fig. 36–5. NCS is provided by the headquarters and service company. Note that each of the three forward supply platoons from the supply company do not operate in this net, but, rather, function in an FM forward service support net under DISCOM control.

36–10. Wire and Messenger

a. Wire. A type wire system for the supply battalion is shown in fig. 36–6. When feasible, the division signal battalion will provide wire links to DISCOM headquarters.

b. Messenger Service. Messenger service from DISCOM to the supply battalion will be provided by DISCOM as required. Internal messenger service within the supply battalion will be provided by organic supply battalion personnel in addition to regularly assigned duties. Aerial messenger service will be utilized to reach forward elements of the battalion.

Section IV. MAINTENANCE BATTALION

36–11. Organization, Mission, and Capability

a. Organization. The maintenance battalion, airmobile division (TOE 29–85) consists of the headquarters and main support company (TOE 29–86) and three forward support detachments (TOE 29–87). Note that the main support company operates in the division support area, while each forward support detachment is placed into the assault area; when a brigade is not committed, the support detachment operates at division base with the main support company.

b. Mission. The airmobile division maintenance battalion provides direct support maintenance and maintenance supply for all division materiel except aircraft, aircraft armament, avionics, medical, cryptographic, airdrop items, clothing, bedding, light textiles, electrical accounting machines, and automatic data processing equipment.

c. Capabilities.

(1) Performs direct support maintenance on supported equipment.

(2) Secures, stocks, and issues repair parts for division equipment that it maintains.

(3) Secures, stocks, and issues direct exchange items for replacement of components and assemblies.

(4) Maintains an operational readiness float of selected end items and components.

(5) Operates a maintenance collecting point and provides limited evacuation assistance to supported units.

(6) Provides technical assistance service to supported units.

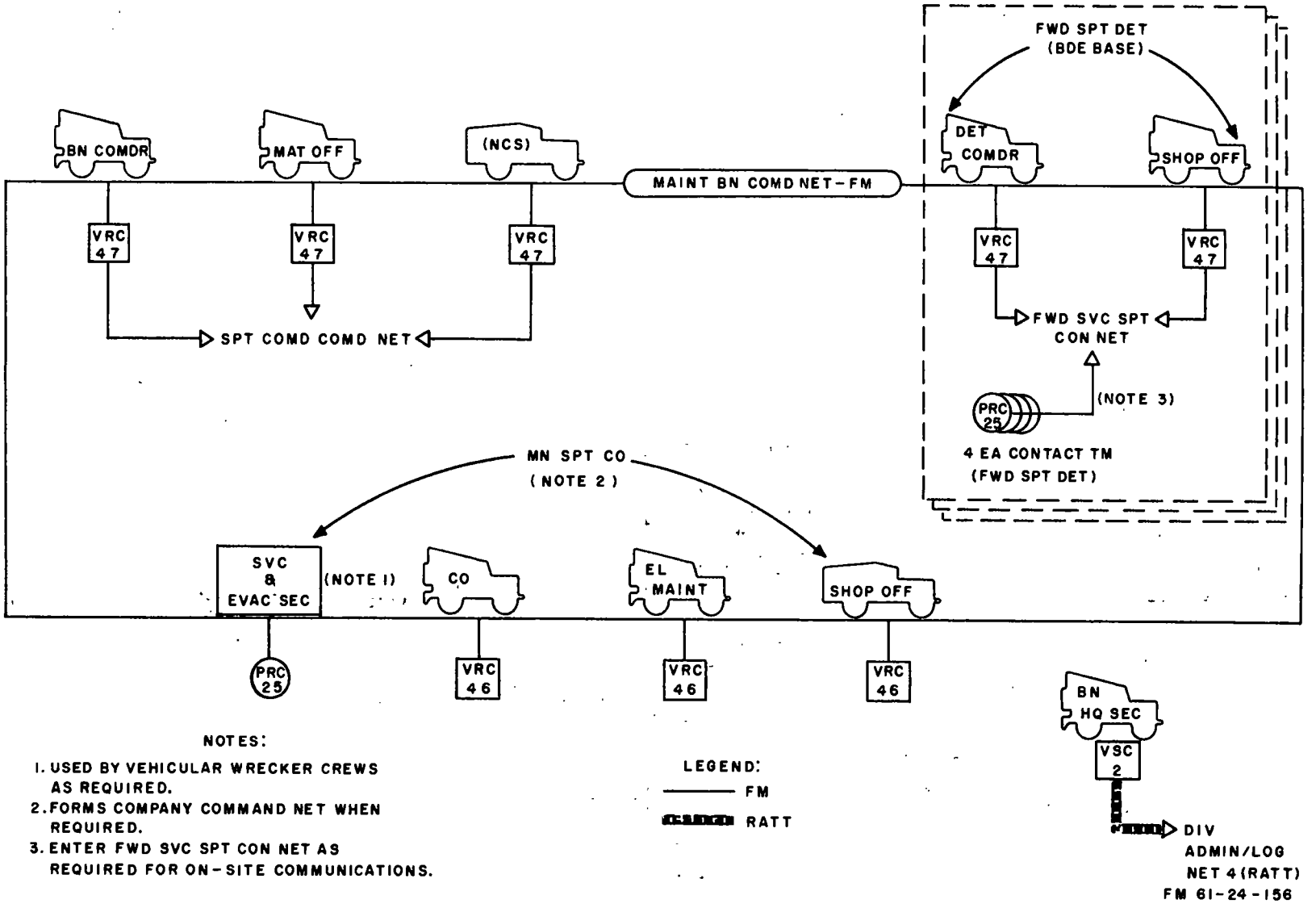


Figure 36–7. Type radio nets, maintenance battalion.

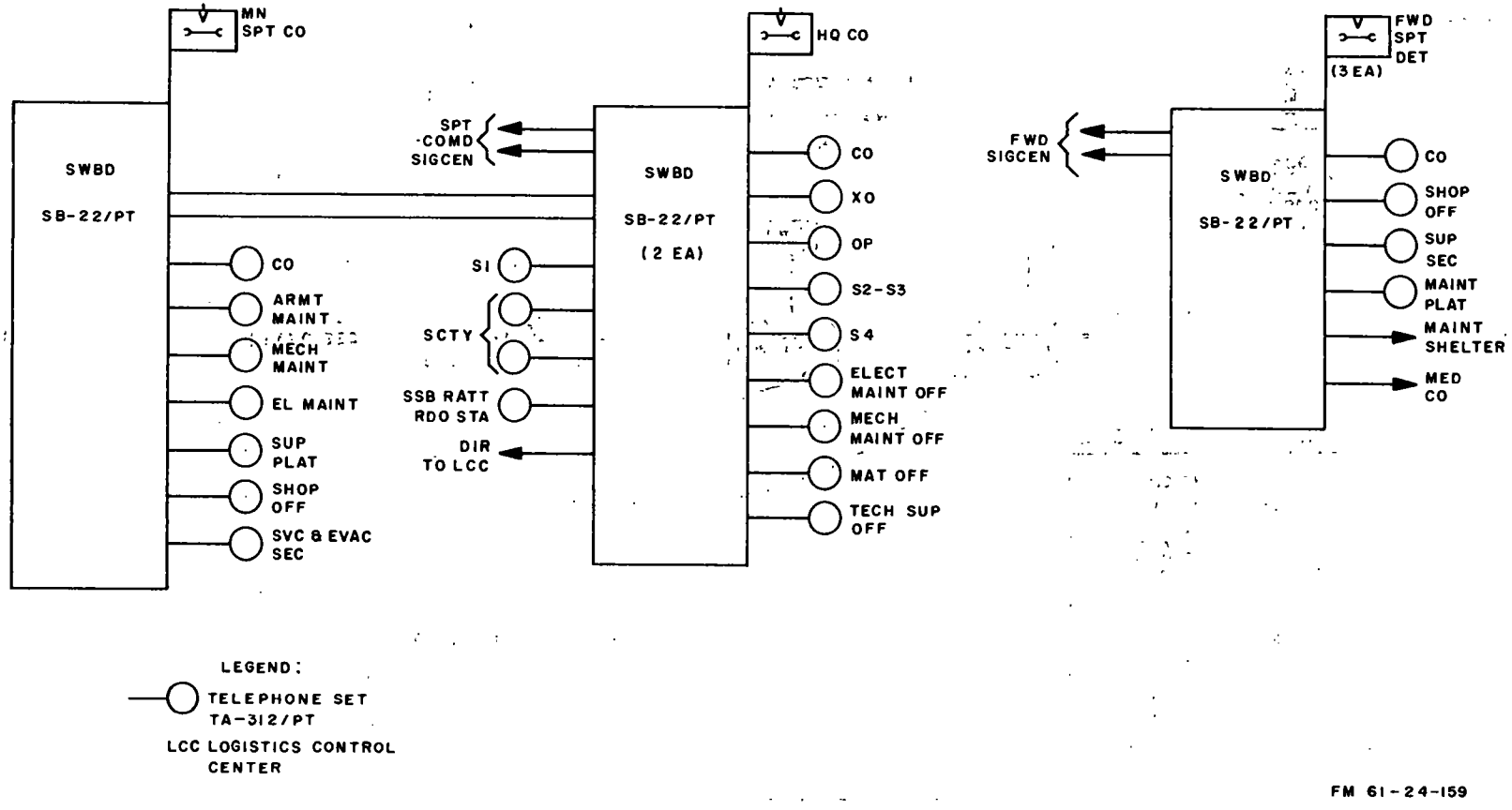


Figure 36–8. Type wire system, maintenance battalion.

36-12. Radio Nets

The maintenance battalion operates and maintains radio stations in the following nets:

a. Division Administration/Logistics Net No. 4 (RATT). One vehicular mounted radio station operates in this net at battalion headquarters (fig. 36-7).

b. Division Support Command Command Net (FM). The battalion commander, battalion materiel officer, and a battalion headquarters radio station operate in this net (fig. 36-7).

c. Maintenance Battalion Command Net (FM). This net is used for command and control purposes by the battalion commander for all battalion units (fig. 36-7). The NCS of the net is located at battalion headquarters. Note that the forward support detachment commanders and associated shop office stations monitor this net (fig. 36-7).

d. Forward Service Support Control Net (FM). Each of these three nets (one per brigade) provides the detachment commander with internal command and control means. Each detachment has four contact teams which utilize organic portable radios to enter this net. If necessary, provisions may be made for maintenance officers of supported units to enter this net as required (fig. 36-7).

36-13. Wire and Messenger

a. Wire. A type wire system for the maintenance battalion is shown in figure 36-8. Because of the distances involved, however, forward elements of the maintenance battalion are not normally connected directly by wire to the battalion switchboard—such service is derived through the division communications system. Wire trunks from battalion headquarters to DISCOM are usually provided by the division signal battalion.

b. Messenger Service. Information given in paragraph 36-10 is also adaptable to the maintenance battalion.

Section V. TRANSPORTATION AIRCRAFT MAINTENANCE BATTALION

36-14. Organization, Mission, and Capability

a. Organization. The transportation aircraft maintenance battalion (TOE 55-405) consists of a headquarters and headquarters company (TOE 55-406) and four transportation aircraft maintenance and supply companies TOE 55-407).

b. Mission. The mission of this battalion is to provide aircraft direct support maintenance to include avionics and armament maintenance, and repair parts support for aircraft organic to the airmobile division.

c. Capabilities.

(1) Provides helicopter-transported contact teams, tailored from the supporting aircraft maintenance unit, for on-site repair in the forward areas.

(2) Provides forward area repair primarily by modular and component replacement.

(3) Evacuates unserviceable aircraft to the division base or other suitable repair site, when onsite repair is not feasible.

(4) Replaces unserviceable aircraft with operational readiness float aircraft.

(5) Delivers emergency repair parts by helicopter.

(6) Uses electronic equipment to transmit aircraft maintenance data and repair parts requests.

36-15. Radio Communications

The transportation aircraft maintenance and supply battalion operates radio stations in the following nets:

a. Division Support Command Command Net-FM. Operating in this net are the following battalion stations: the battalion commander who operates in or monitors this net as required and a battalion headquarters station,

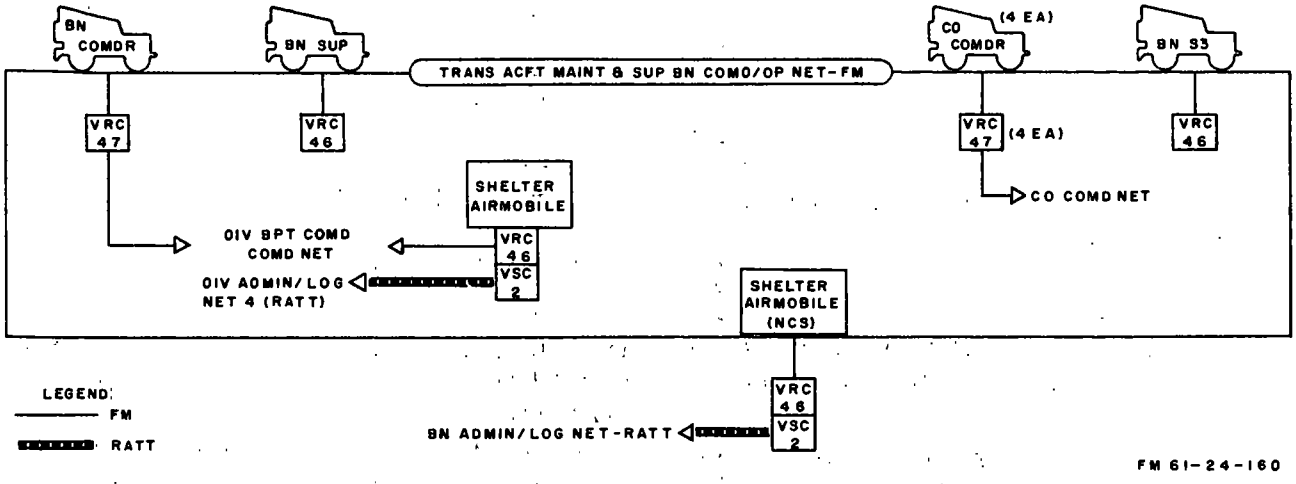


Figure 36–9. Type radio nets, transportation aircraft maintenance and supply battalion, airmobile division.

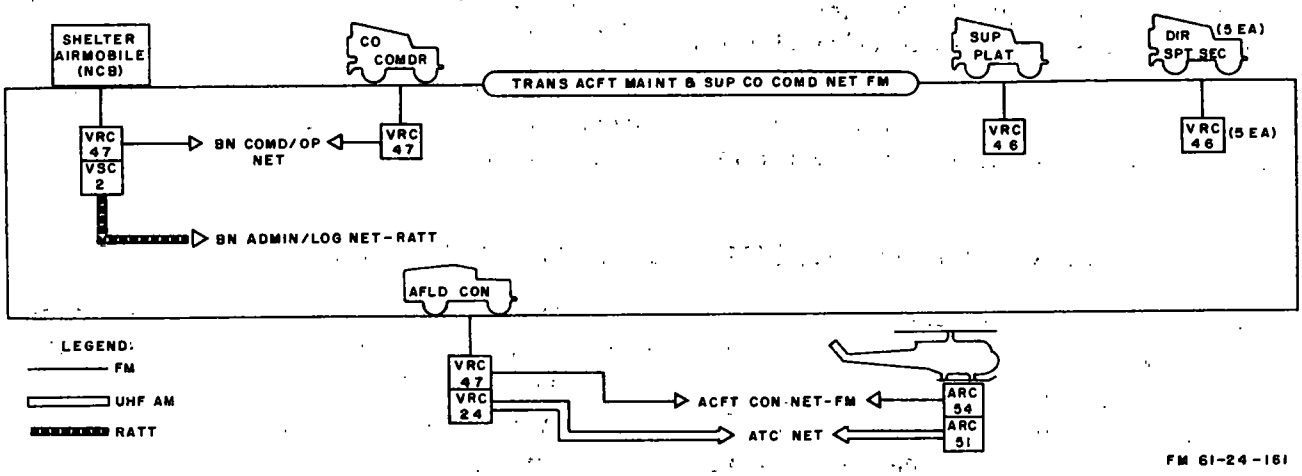


Figure 36–10. Type radio net, transportation aircraft maintenance and supply company, transportation aircraft maintenance and supply battalion.

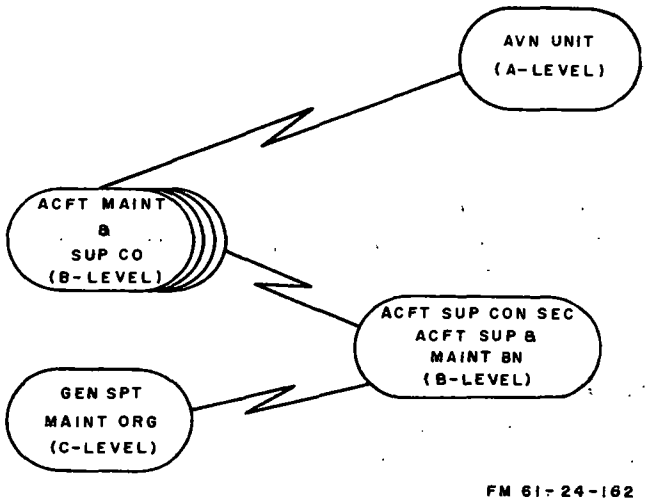


Figure 36–11. Type automated transceiver net.

shelter-mounted for aerial transportation. Refer to figure 36–9.

b. Division Administrative Logistics Net No. 4-RATT. Battalion headquarters operates in this net by radio teletypewriter, voice, or CW; primarily the net links the transportation aircraft maintenance and supply battalion with DISCOM and aviation group headquarters (fig. 36–9).

c. Transportation Aircraft Maintenance and Supply Battalion Command/Operations Net-FM. This FM voice net is used for immediate command and control of battalion operations. Stations operating in this net are shown in figure 36–9. Note that the battalion NCS is

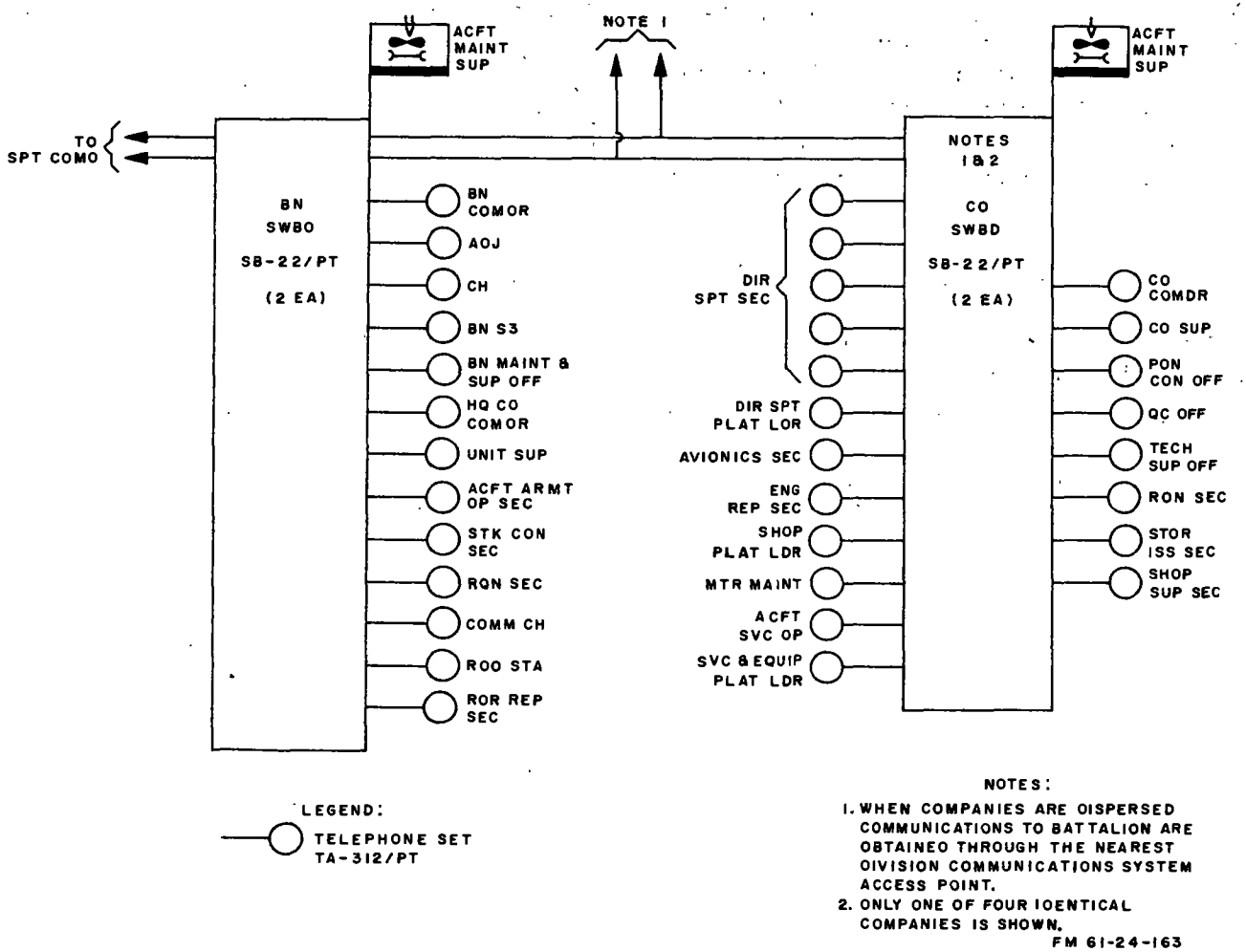


Figure 36–12. Type wire system, transportation aircraft maintenance and supply battalion.

shelter-mounted in the same shelter that houses the RATT set used for battalion administration and logistics purposes (*d* below).

d. Transportation Aircraft Maintenance and Supply Battalion Administrative-Logistics Net (RATT). This radio teletypewriter, voice, or CW net is used internally within the battalion for the purpose indicated. NCS is at battalion headquarters. Note that the battalion and company radio sets are shelter mounted for aerial transportation (fig. 36–9 and 36–10).

e. Transportation Aircraft Maintenance and Supply Company Command Net-FM. This FM voice net is used for internal command control of company operations. A type net structure is shown in figure 36-10 with NCS shelter mounted at company headquarters. Each of the four operating companies of the battalion maintain a radio net of this type. Entrance into the aircraft control net and air traffic control net may be effected when required.

f. Automated Requesting System. An automatic data transceiver system provides an electronic means for rapid transmission of aircraft maintenance supply requests. It utilizes DA Form 2765 (into which supply management data have been prepunched). Transceivers and necessary key-punch equipment are located at A-level, B-level, and C-level. Transmission between maintenance levels may be by landline or radio communications (fig. 36–11).

36–16. Wire and Messenger

a. Wire. A type wire system for the transportation aircraft maintenance and supply battalion (including an operating company) is shown in figure 36–12. Normally, there is no direct wire link from battalion headquarters to organic companies because of distance dispersals. Links to battalion may be obtained through the division communications system.

b. Messenger. Information given in paragraph 36–10 is also adaptable to the transportation aircraft maintenance and supply battalion.

Section VI. MEDICAL BATTALION

36–17. Organization, Mission, and Capabilities

a. Organization. The medical battalion, airmobile divisions (TOE 8–25) consists of a headquarters and support company (TOE 8–26) and three identical medical companies (TOE 8–27).

b. Mission. As prescribed in the division medical plan, orders, and policies, the medical battalion provides division-level medical service support to divisional and unit level medical support to divisional units as required.

c. Capability. At full strength and consistent with its mission, the medical battalion can provide:

(1) Aeromedical and limited ground-evacuation of patients to medical facilities from aid stations, company aid posts, isolated platoons, and aircraft crash sites.

(2) Air crash rescue support on an area basis for divisional and nondivisional aircraft.

(3) Clearing station treatment of patients.

(4) Limited management of psychiatric problems.

(5) Unit level medical support on an area basis, as required.

(6) Division level medical supply and medical equipment maintenance support.

(7) Provides optometric service and presurfaced single-vision prescription spectacle fabrication and repair services for units organic or attached to the division.

36–18. Radio Nets

The medical battalion, airmobile division, operated radio stations in the following radio nets:

a. Division Administrative/Logistics Net No. 4 (RATT). Battalion headquarters operates a vehicular station in this radio teletypewriter,

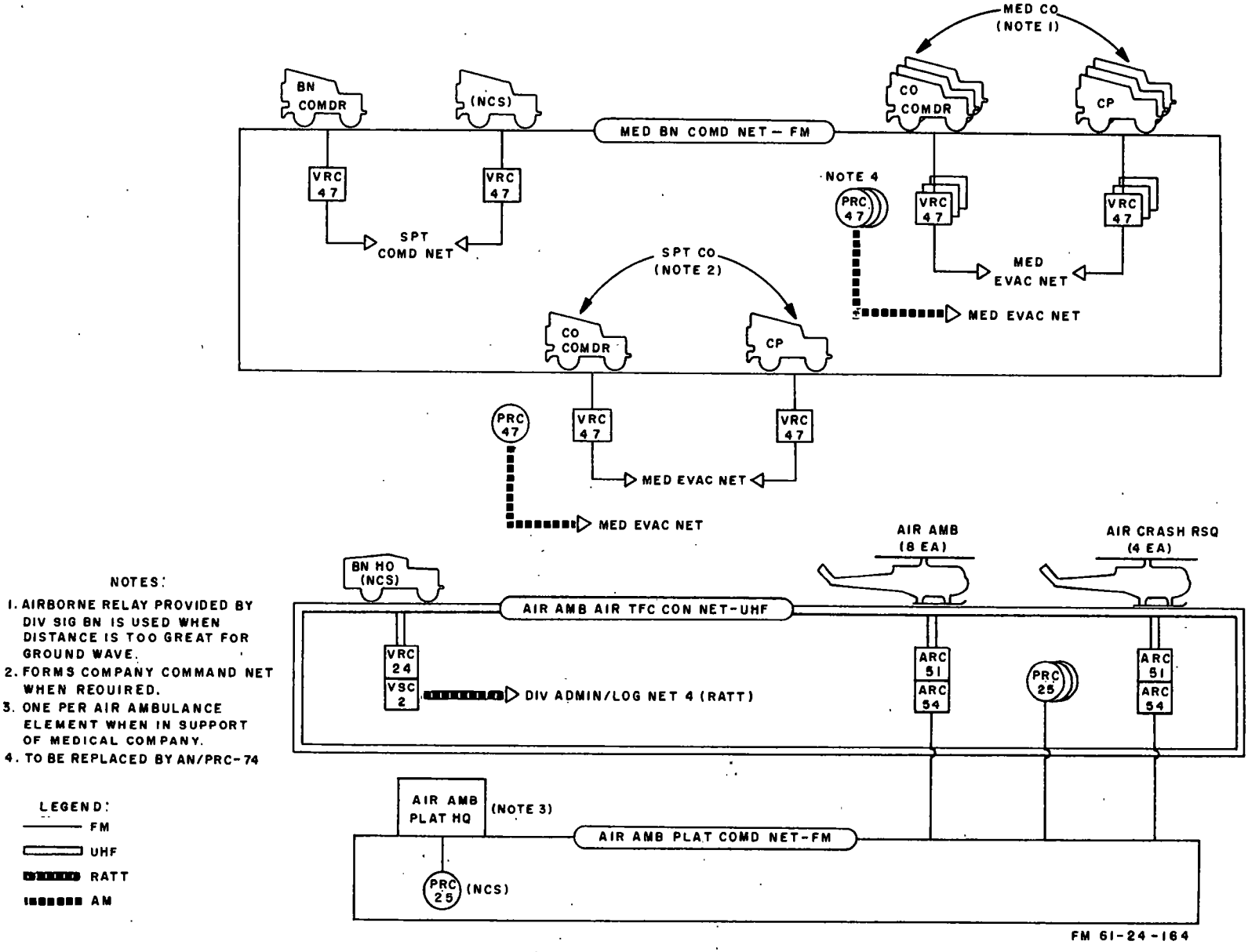


Figure 36–13. Type radio nets, medical battalion, airmobile division.

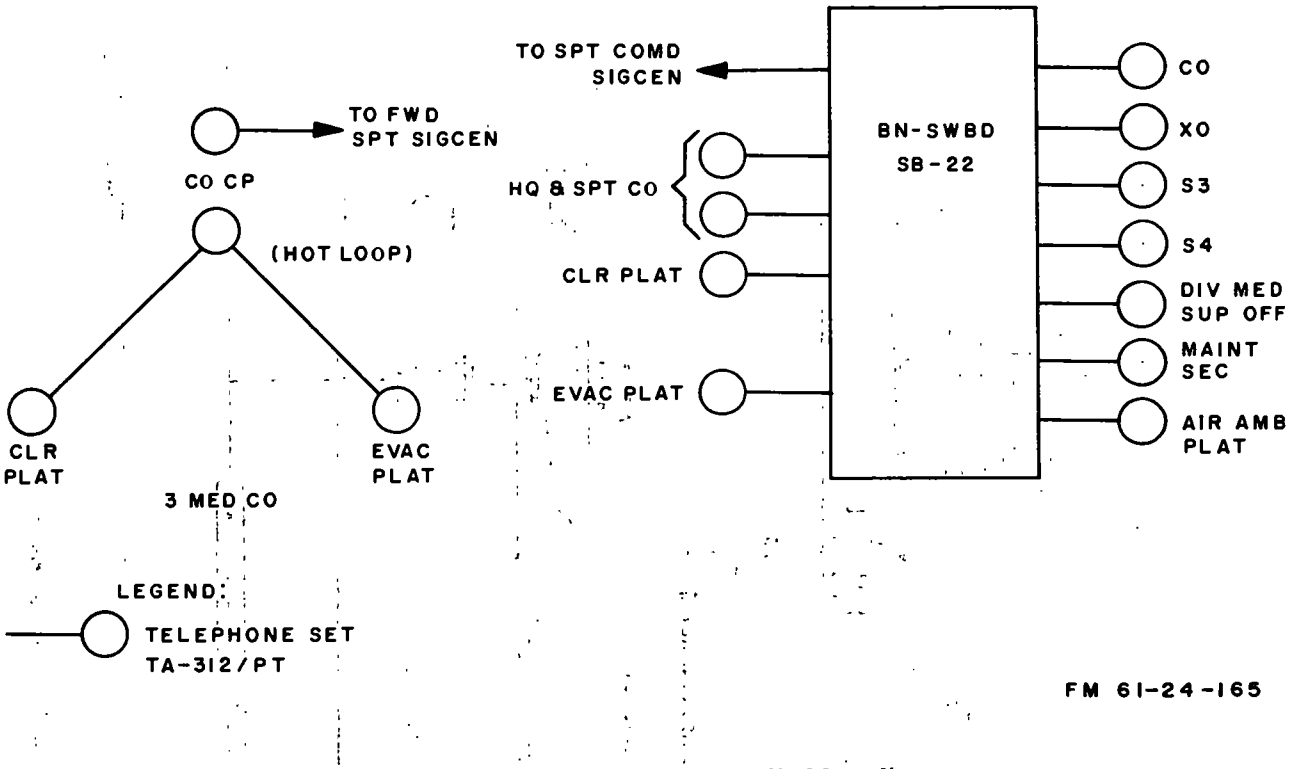


Figure 36–14. Type wire system, medical battalion.

voice, or CW net. The same vehicle also contains the NCS (AM radio) for operation in the air ambulance air traffic control net (fig. 36–13).

b. Division Support Command Command Net (FM). The medical battalion commander and battalion headquarters operate a station in this net (fig. 36–13).

c. Air Ambulance Air Traffic Control Net (UHF AM). This voice net is used for air traffic control of eight air ambulances and four air crash rescue helicopters. NCS is a ground station at battalion headquarters (fig. 36–13). The helicopters are organic to the air ambulance platoon of the medical battalion headquarters and support company.

d. Air Ambulance Platoon Command Net (FM). This net has FM stations paralleling the UHF AM stations in the air traffic control net (*c* above). The net is used for internal command and control of the air ambulance platoon of battalion headquarters and support company with NCS at air ambulance platoon headquarters. Note that the net employs portable FM radio sets and the FM radio equipment installed in the helicopters.

e. Medical Evacuation Nets (AM and FM). Each of the three medical companies has two FM voice vehicular sets and one small portable AM voice radio set for use as follows (fig. 36–13):

(1) *FM.* The FM vehicular radio sets may be used for an operation of an air evacuation net with unit receiving medical support. This radio set also permits monitoring in the battalion command net-FM.

(2) *AM.* A small portable AM SSB voice radio set will permit operation in a longer range air evacuation net.

f. Medical Battalion Command Net (FM). This FM voice net is used for internal command and control of battalion operations (fig. 36–13). NCS is at battalion headquarters. If radio communications cannot be maintained

with subordinate units, a request for utilization of the airborne relay may be submitted to the division C–E officer (para 28–15).

36–19. Wire and Messenger

a. Wire. A type wire communications system for the medical battalion is shown in figure 36–14. Voice links to medical companies operating forward in support of brigades will be through the division multichannel network.

b. Messenger. Information given in paragraph 36–10 is also adaptable to the medical battalion.

Section VII. ADMINISTRATION COMPANY

36–20. Organization, Mission, and Capability

a. Organization. The administrative company, airmobile division (TOE 12–77) is organized as follows:

(1) Company headquarters.

(2) Inspector general section.

(3) Staff judge advocate section.

(4) Finance section.

(5) Chaplain section.

(6) Information section.

(7) Adjutant general section.

(8) Replacement detachment.

b. Mission. The mission of the administration company is to:

(1) Serve as a carrier unit which provides support to those members of the division special staff listed in *a* above.

(2) To provide the necessary personnel and administrative support to sustain the division; this includes replacement support and a mechanized personnel service for all units assigned or attached to the airmobile division function as a basic organizational element of airmobile division rear echelon.

c. Capability. At full strength and consistent with its mission, the administration company provides the following:

(1) Logistical support of, and plans for, tactical security for staff agencies assigned to the company.

(2) Division level personnel and administrative support for all personnel assigned or attached to the airmobile division.

(3) Company level personnel and administrative support for personnel assigned to the administration company.

(4) Mess facilities for personnel assigned, attached, or located in division headquarters rear echelon.

(5) The capacity to receive, control, and administratively process a maximum of 300 individuals at any given time. This may be any combination of personnel arriving as replacements, returning from the hospital, or departing for rotation, or other purposes. In addition, the replacement detachment of the administration company can control any number of replacement TOE units which have their own mess capability.

(6) The capability for operating a separate mess facility for personnel processing through the replacement detachment when the adjutant general deems this necessary.

d. Limitations. The administration company, normally located at the division rear echelon or in the division support area, has no organic communications facilities. The rear operations platoon, command operations company, division signal battalion (para 28–8*d*), will provide the necessary communication facilities for administration company operations.

36–21. Administration Company Communications

The company is authorized a switchboard which is operated by organic personnel in addition to other duties. This switchboard is con-

nected by trunk circuit to a division communication switching center. The trunk circuit, switching center, and other supplemental communication facilities are normally provided by the division rear echelon support platoon of the airmobile division signal battalion. The administration company is not authorized organic single channel radio sets.

APPENDIX A

REFERENCES

A-1. General

This appendix contains a selected list of publications pertinent to communications in armored, infantry (mechanized) and airborne divisions. For availability of items listed and other publications refer to DA Pamphlets 310-1, 310-3 and 310-4.

A-2. Army Regulations

(C) AR 10-122	U. S. Army Security Agency (U).
AR 115-10	Meteorological Support for the U. S. Army.
AR 380-5	Safeguarding Defense Information.
AR 380-26	Policy for Use of Encrypt-for-Transmission-Only (EFTO) Procedure.
(C) AR 380-40	Department of the Army Policy for Safeguarding COMSEC Information (U).
AR 380-41	Control of COMSEC Materiel.
(C) AR 380-51	Transmission of Classified Information (U).
AR 525-25	Delineation of Service Responsibilities for Tactical Air Control Parties.

A-3. DA Pamphlets

(C) DA PAM 310-9	Index of COMSEC Publications (U).

A-4. Field Manuals

FM 1-5	Aviation Company.
FM 1-15	Aviation Battalion, Group, and Brigade.
FM 1-100	Army Aviation Utilization.
FM 5-135	Engineer Battalion, Armored, Infantry, and Infantry (Mechanized) Divisions.
FM 5-136	Engineer Battalions, Airborne and Airmobile Divisions.
FM 6-10	Field Artillery Communications.
FM 6-20-1	Field Artillery Tactics.
FM 6-20-2	Field Artillery Techniques.
FM 7-11	Rifle Company, Infantry, Airborne, and Mechanized.
FM 7-20	The Infantry Battalions.
FM 7-30	The Infantry Brigades.
FM 8-15	Medical Service in Divisions, Separate Brigades, and the Armored Cavalry Regiment.
FM 11-21	Tactical Signal Communications Systems, Army, Corps, and Division.
FM 11-50	Signal Battalion, Armored, Infantry, and Infantry (Mechanized) and Airmobile Divisions.
FM 11-57	Signal Battalion, Airborne Division.

FM 17–1	Armor Operations.
FM 17–15	Tank Units, Platoon, Company, and Battalion.
FM 17–30	The Armored Brigade.
FM 17–36	Divisional Armored and Air Cavalry Units.
FM 19–1	Military Police Support, Army Divisions and Separate Brigades.
FM 21–30	Military Symbols.
FM 21–60	Visual Signals.
FM 24–1	Tactical Communications Doctrine.
FM 24–16	Signal Orders, Records and Reports.
FM 24–17	Tactical Communications Center Operation.
FM 24–18	Field Radio Techniques.
FM 24–19	Communications-Electronics Reference Data.
FM 24–20	Field Wire and Field Cable Techniques.
FM 24–21	Field Radio Relay Techniques.
FM 29–30	Maintenance Battalion and Company Operations in Divisions and Separate Brigades.
FM 29–50	Supply and Services in Divisions and Separate Brigades.
FM 30–5	Combat Intelligence.
FM 30–20	Aerial Surveillance-Reconnaissance, Field Army.
(C) FM 32–5	Signal Security (SIGSEC) (U).
(C) FM 32–20	Electronic Warfare (Ground Based) (U).
(S) FM 32–20A	Electronic Warfare (Ground Based) (U).
(C) FM 32–20–1 (test)	Electronic Warfare (Ground Based) (U).
FM 44–1	U. S. Army Air Defense Artillery Employment.
FM 54–2	The Division Support Command and Separate Brigades Support Battalion.
FM 61–100	The Division.
FM 100–27	U. S. Army/U. S. Air Force Doctrine for Tactical Airlift Operations.

A–5. Tables of Organization and Equipment

TOE 1–55	Aviation Battalion, Airborne Division.
TOE 1–75	Combat Aviation Battalion, Infantry Division.
TOE 1–101	Headquarters and Headquarters Company, Aviation Group, Airmobile Division.
TOE 1–102	General Support Aviation Company, Aviation Group, Air Cavalry Division.
TOE 1–155	Assault Helicopter Battalion, Aviation Group, Airmobile Division.
TOE 1–156	Headquarters and Headquarters Company, Assault Helicopter Battalion, Air Cavalry Division.
TOE 1–157	Aerial Weapons Company, Assault Helicopter Battalion, Air Cavalry Division.
TOE 1–158	Assault Helicopter Company, Assault Helicopter Battalion, Air Cavalry Division.
TOE 1–165	Assault Support Helicopter Battalion, Airmobile Division.
TOE 1–166	Headquarters and Headquarters Company, Assault Support Helicopter Battalion, Airmobile Division.
TOE 1–167	Assault Support Helicopter Company, Assault Support Helicopter Battalion, Airmobile Division.
TOE 5–25	Engineer Battalion, Airborne Division.

TOE 5–145	Engineer Battalion, Armored Division or Engineer Battalion, Infantry Division (Mechanized).
TOE 5–155	Engineer Battalion, Infantry Division.
TOE 6–100	Infantry Division Artillery.
TOE 6–155	Field Artillery Battalion, 105-mm, Towed, Infantry Division.
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TOE 67–42	Headquarters and Headquarters Company, Airmobile Division Brigade.

A–6. Technical Manuals

TM 38–750	The Army Maintenance Management System (TAMMS).
TM 38–750–1	The Army Maintenance Management System (TAMMS) Field Command Procedures.

APPENDIX B
COMMUNICATIONS IN STABILITY OPERATIONS

Section I. GENERAL INFORMATION

B–1. Application
Unless otherwise noted, the general information presented in this appendix applies equally to the armored, infantry, mechanized, airborne, and airmobile divisions.

B–2. Basic Considerations
As given in this text, the principles of division communications for limited and general war will apply to stability operations (the army portion of internal defense and internal development operations (IDAID)); however, significant modifications usually will be necessary. Since such modifications must be particularized to the given IDAID situation, only general guidelines will be presented in this appendix.

a. In stability operations, the division signal battalion may be required to support division elements operating over land areas considerably larger than those encountered in limited and general war. Frequently, the division communication system is integrated with the civil communication system in a particular area such as a region, province, or corps; in many cases, the division system may be the only operational system in the area. Situations such as this necessitate that signal support be rendered to other U.S. forces, host country (HC), other allied units, and civil agencies in the area.

b. In stability operations, independent operations by subordinate divisional units will necessitate an increase in TOE communication capability. For example, an independent brigade operation may require a communication capability approximating that of an entire division engaged in conventional warfare (limited and general warfare). In all cases, early identification by the DSO of the total communication requirements is essential to insure that each independent force is dispatched with sufficient communication means to accomplish its mission.

c. Advisory assistance provided by the division signal battalion may be either short term or long term. Such assistance usually takes the form of military training teams provided to host country armed forces or civilian agencies. The battalion also may be assigned military civic action, psychological, intelligence, and internal security operations. Refer to FM 11–50 and FM 11–57.

d. The increased division communications requirements summarized above will necessitate assistance from TOE 11–500 teams and/or higher headquarters units.

Section II. DIVISION LEVEL COMMUNICATIONS

B–3. Division Headquarters
In stability operations, the conventional doctrine of two or three echelons of division headquarters displacing at fairly frequent intervals may not apply. More often, the division will operate from a permanent division base (or base camp), which effectively consolidates the signal facilities usually found at division main, division alternate, support command, and division rear. However, the signal battalion must reserve sufficient communications facilities to establish a division forward CP to support combat operations of brigade or battalion strength.

B–4. Additional Communications Characteristics in Stability Operations

In addition to the communications characteristics listed in paragraph 6–7, the division communication system in stability operations must also provide—

a. Increased radio communication means at lower levels such as battalion type radio sets at company level and company level radio sets at platoon level.

b. Entry into and/or integration with host country and other allied, command, administrative, and intelligence nets.

c. Integration with host country fire control nets.

d. Normal division signal support to other U.S., host country, or allied units.

e. Increased multichannel radio capability.

f. Increased use of aerial radio retransmission.

g. Communication between applicable division units and host country area coordination centers (ACC).

B–5. Communication Planning Factor

In stability operations, the following communication planning factors must be considered:

a. From a division staff planning basis, there must be early identification of total communication support requirements to include interface and integration with host country systems at appropriate levels of command and control.

b. Closely connected with *a* above, there must be an early assessment of communication requirements from an operational, administrative, and advisory standpoint. Such an assessment will form the basis for—

(1) The assignment of missions and priorities for the allocation of organic division communication resources.

(2) The procurement of additional communication resources (personnel and equipment) to meet requirements that are beyond division TOE capabilities.

c. Since stability operations may be joint or combined, communication training should emphasize certain areas of critical concern that will necessitate both simplification and standardization. Such items should be included in a combined and/or joint communication SOP, SOI, and SSI—a typical list follows:

(1) Fire direction and control.

(*a*) Close air support nets.

(*b*) Naval gunfire control nets.

(*c*) Artillery fire direction nets.

(*d*) Air traffic regulation and identification nets.

(2) Maneuver and mobility.

(*a*) Airmobile operation nets.

(*b*) Convoy control nets.

(3) Command and control.

(*a*) Combined command and control nets.

(*b*) Combined intelligence nets.

(*c*) Combined spot report nets.

B–6. Composition

Refer to paragraph 6–9 for a typical composition of the division communication systems for limited and general war. Additional elements that may be required for stability operations are listed below:

a. Combined signal centers at host country area coordination centers.

b. Multichannel links with host country governmental agencies and military forces.

c. Combined RWI stations at host country area coordination centers for interconnecting host country FM radio stations with other host country units and agencies.

B–7. Responsibility of the DSO

In stability operations, the DSO in addition to normal duties may serve as senior signal officer to host country units within the area of operations. As such, he will plan and coordinate the integration of division and host country signal assets in the area.

B–8. Multichannel Radio Communications

a. In stability operations, the division multichannel network must be adapted to the mission, terrain, and the degree of support that will be required by host country, joint and allied forces in the area. The conventional type multichannel diagram shown in figure 6–6 will seldom apply because of the unpredictable lineup of forces in the division's area. For example, the division signal battalion may be required to provide multichannel radio inter-

connections solely for host country use; or the USAF may be largely dependent upon the division network for telephone and teletypewriter service.

b. Since the multichannel requirements in stability operations are not type predictable, the communications planning factors (para B–4) when applied, will generally indicate a need for communication resources over and above TOE authorizations.

c. In stability operations, a multichannel terminal (both radio and carrier) should be provided by the division signal battalion at each fire support base participating in a particular operation—these are bases of maneuver battalion or reinforced combat company strength. Such provision will insure direct telephone communication to brigade and/or division headquarters. Where possible, the terminals will afford both primary and alternate links of communication—four channels of communication are considered a desirable minimum from a fire support base to a higher headquarters. Modification of the currently authorized TOE multichannel equipment is frequently necessary to make it air transportable to the fire support base of operations.

B–9. Radio

a. In stability operations, FM radio is a primary means of communications used by commanders for immediate command and control; lightweight AM SSB voice radios will also give increased ranges for this purpose. The division signal battalion may be required to provide augmenting radio means to designated divisional units as required. For example, because of the critical role of army air in stability operations, direct FM radio contact from AAE DTOC to the supporting army aviation battalions is essential. Other similar specialized FM radio nets may be established by the division signal battalion as required. In addition, the establishment of FM radio retransmission stations will normally fall under division signal battalion responsibility.

b. Type division RATT nets shown in the text will generally apply to stability operations. However, reconfigurations may be necessary to accommodate divisional forces and host country/allied forces in the area. Addition of more radio stations may require the formulation of more RATT nets to facilitate traffic handling and the net control function. However, the increased range of FM radio sets and the provision of multichannel radio terminals at brigade and battalion may relegate RATT sets to a backup role to VHF multichannel radio links.

B–10. Cable and Wire Installation

a. At division base, initial cable and wire installation for the interconnection of signal facilities is performed by the division signal battalion. As growth requirements increase, augmentation of cable and wire installations may be supplied by Army or USASTRATCOM cable units. In this second phase, the normal division signal battalion TOE allocation of cable and wire are envisioned as insufficient as division base area wire requirements progressively increase.

b. As required, wire and cable teams from the division signal battalion will provide wire and cable interconnection assistance at brigade and battalion base sites.

c. Due to its vulnerability to enemy action, wire and cable for long distance trunking has limited divisional use in stability operations.

B–11. Switchboards

In stability operations, a consolidated division base will normally require switchboards larger than the 120-line boards authorized on current division signal battalion TOE. Provision of a larger switchboard at the division base and operated by Army or USASTRATCOM signal units will free some division switching facilities for use at division forward CP's, DTOC's, and other sites as required.

B–12. Sole-User and Common-User Circuits

a. Sole-User Circuits. In stability operations, more people are directly involved in immediate action operations and may require sole-user (point-to-point communications). In establishing demands for sole-user circuits, the desires of the using division staff elements should be considered where possible. Additionally, sole-user circuits to host country forces and other

friendly forces into the area may require sole-user circuits to insure mutual support.

b. Common-User Circuits. Requirements for a division common-user telephone network will continue to be extensive in stability operations. To retain flexibility, common-user communications must not be downgraded to an unacceptable degree to meet increasing sole-user demands. For units below brigade, one or two common-user circuits to parent headquarters are considered minimum essential—such circuits can be provided by wire or cable when in base camp, or by multichannel radio when the unit establishes a fire support base supported by division signal battalion teams.

B–13. Messenger Service

In stability operations, enemy activity and the greater distance involved curtail foot and motor messenger service. Consequently, the requirements for air messenger service will increase throughout the division area of operations.

Section III. DIVISION COMMUNICATIONS BELOW DIVISION LEVEL

B–14. Brigade Communications

a. Brigade headquarters may take on the characteristics of a brigade base from which component maneuver battalions conduct tactical operations. In this situation, communications at the brigade base must satisfy increased combat, combat support, and combat service support requirements. Augmentation of normal brigade communication resources will be imperative in accordance with the needs of the tactical situation.

b. Brigades operating as separate brigades will require minimally the services of a forward area signal center platoon of the division signal battalion. Additional augmentation may be further required to assist the brigade in manning the fixed base camp communications.

B-15. Maneuver Battalion Communications

In all maneuver battalion operations, radio is the most frequently used means of communication and in the IDAID environment, there will be an even greater requirement. The battalion will require radio sets with additional range and greater traffic capability. A multichannel radio terminal (lightweight, 4-channel) will be extremely useful for telephone and teletypewriter linkage or higher headquarters.

a. Maneuver battalions may operate in, or monitor designated radio nets of the district or village area coordination center.

b. Radio may be used to coordinate battalion mortar fire with host country defensive artillery.

B–16. Company Communications, Maneuver Battalions

a. Where appropriate, additional dismounted radio sets must be provided for extended operations in stability operations. These radio sets should be both AM and FM voice types. Squads may require platoon level radio sets, and platoons concurrently may require company level sets.

b. In stability operations, increases in the number of radio sets used will increase the number of trained radio operators required at the company level.

B–17. Armored Cavalry Squadron or Troop Communications

a. Communications resources organic to the armored cavalry squadron are ideally suited to cope with the greater distances and heavy traffic common in stability operations. The squadron's radio sets, FM and AM voice and RATT, appear equal to mission requirements for stability operations. The increased communication load for an infrantry battalion, reflects the normal situation for the cavalry squadron.

b. The squadron may be required to operate in or monitor the appropriate level area coordination center nets for command and information purposes.

c. Because of the fire support capability inherent in the troops of the squadron (including the air cavalry troop), communications and liaison should be established with host

country territorial defense artillery units located within the operational area.

B–18. Division Artillery

To maximize joint artillery effectiveness, consideration should be given to the integration of applicable division artillery radio nets with those of host country and other allied forces—such nets might be artillery radio nets used for tactical purposes or for territory defense. For example, on a combined basis, it may be advantageous that division artillery nets accommodate the entry of host country and allied stations into division fire request channels; this may be accomplished on a direct basis or through a host country area coordination center.

B–19. Engineer Battalion

In stability operations, engineer support to combat operations normally will be by fragmented engineer elements dispersed over considerable distances. Such dispersal will require a heavy employment of radio sets over and above normal TOE authorizations; the radio sets required will include FM/AM voice and RATT. RATT nets from engineer battalion to company to platoon may be required.

B–20. Division Air Support

In stability operations, organic division aircraft, augmented as required by other army aircraft, perform critical combat, combat support, and combat service support functions. Units down to platoon size must be provided with adequate radio sets to communicate with supporting aircraft and/or to requisition immediate emergency aircraft support.

B–21. Division Support Command

a. In stability operations, division support command headquarters is generally located at the division base. Communications for support command headquarters and major subordinate command elements are provided from the division base by the division signal battalion augmented as required by TOE 11–500 teams and higher headquarter's units.

b. Support command elements operating at brigade base may be considered comparable to brigade trains. Communications for these elements are provided by organic TOE resources, division signal battalion support, and TOE 11–500 teams.

c. The division provost marshal, MP units, and MP patrols must have the added capability of maintaining radio contact with host country area coordination centers. Each area coordination center must maintain radio contact with civilian and military police nets throughout its area of jurisdiction.

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By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

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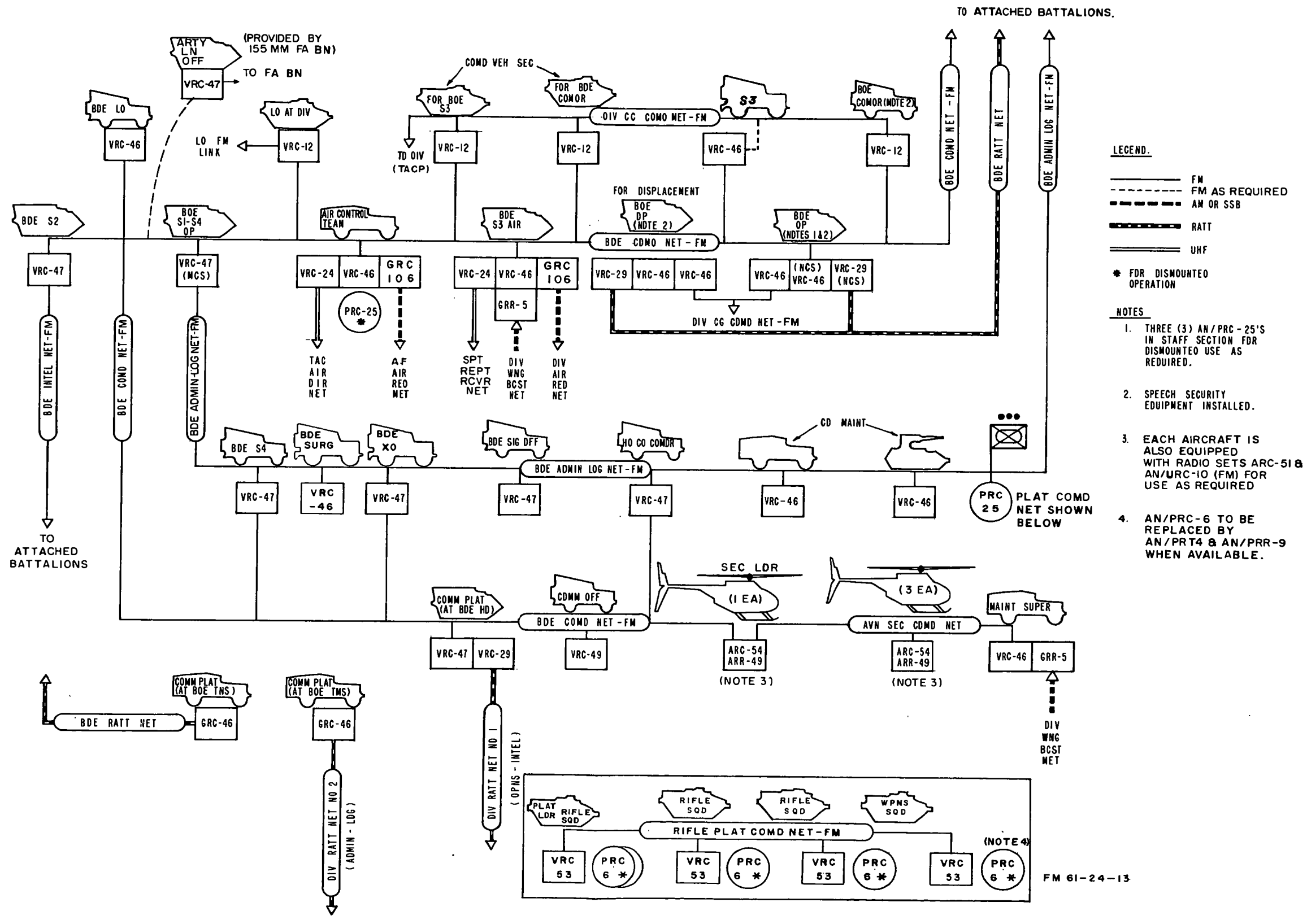


Figure 7–1. Type radio nets, armored division brigade.

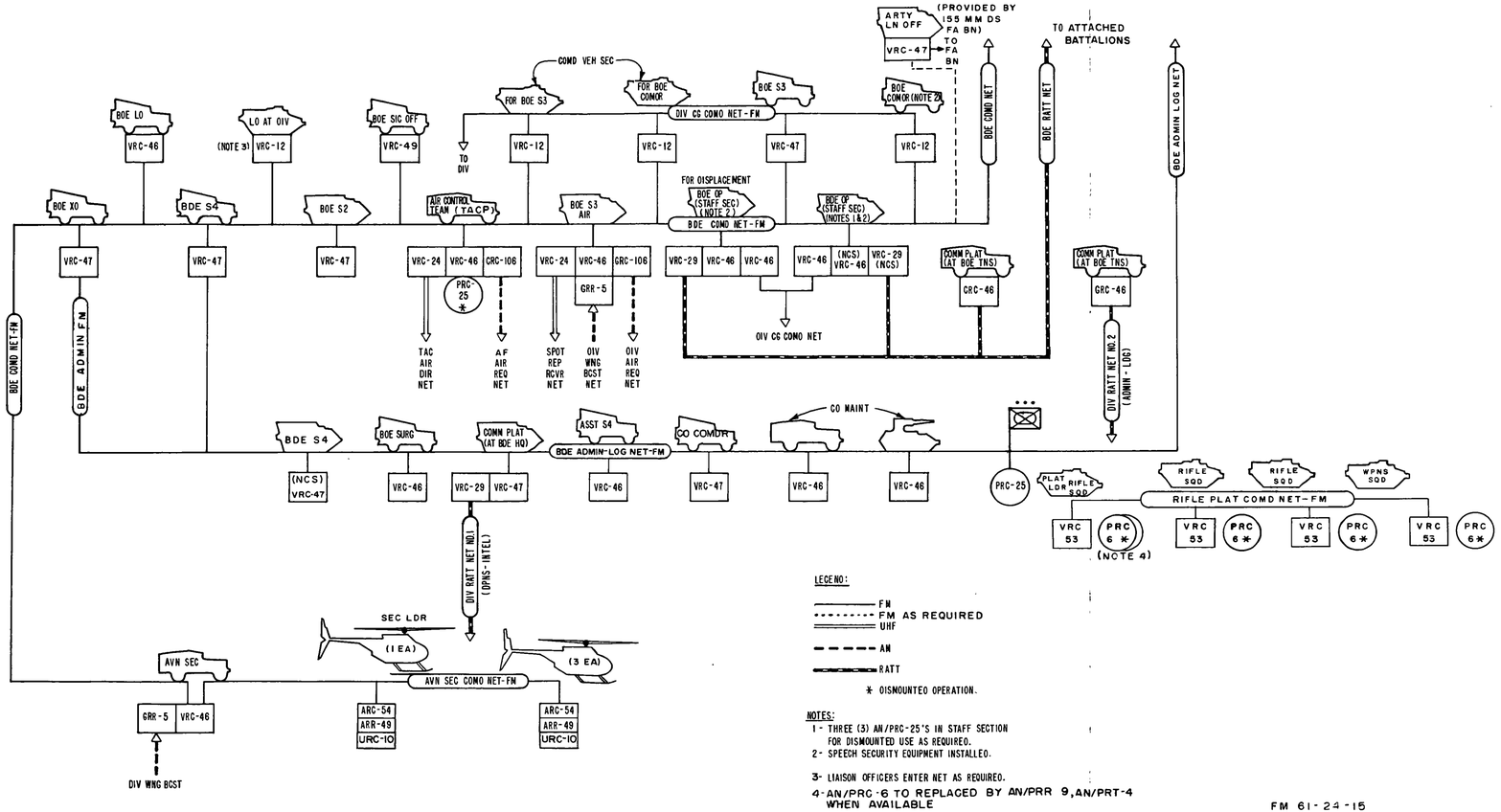


Figure 7-3. Type radio nets, infantry division (mechanized) brigade.

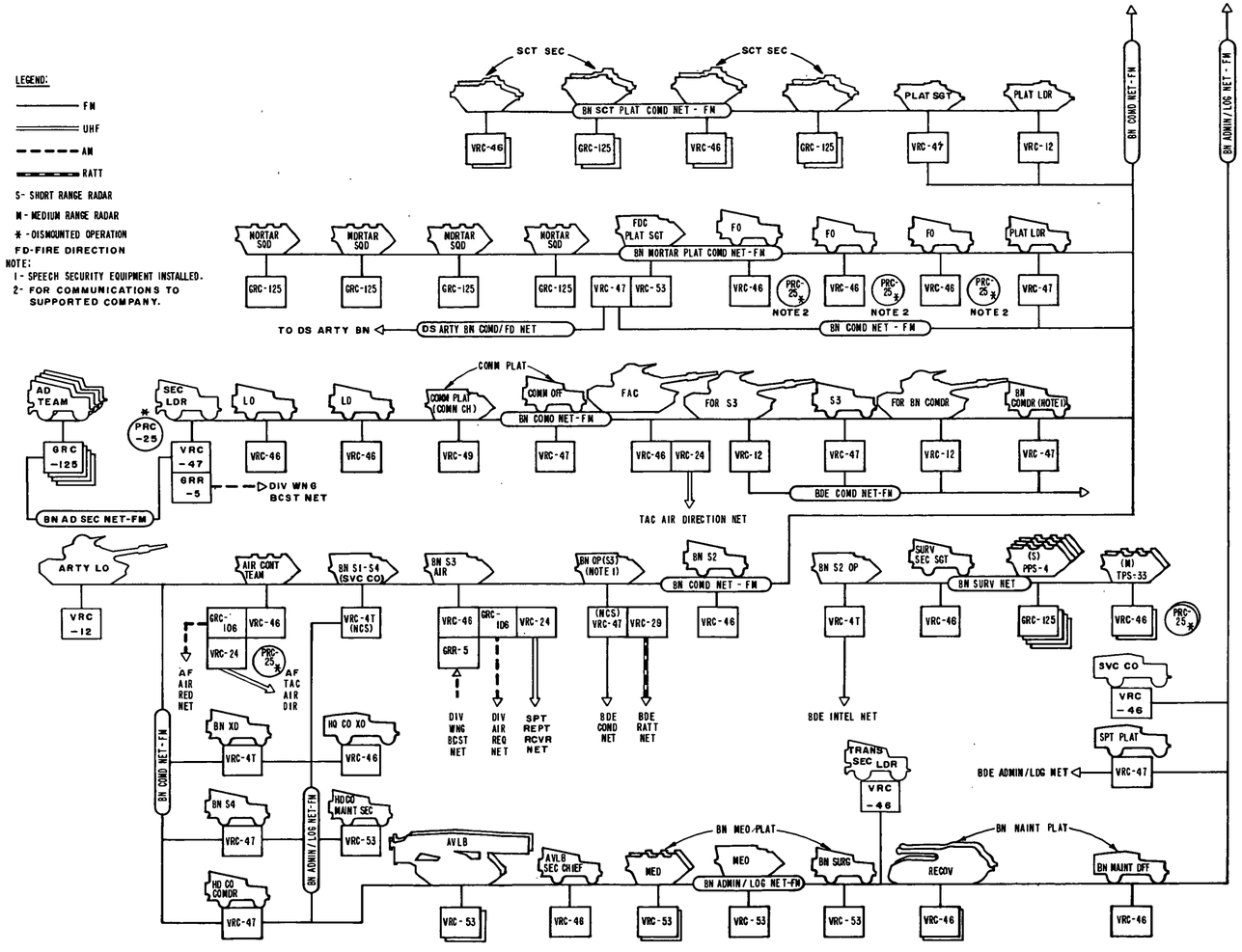


Figure 8–1. Type radio nets, tank battalion.

FM 61-24-20

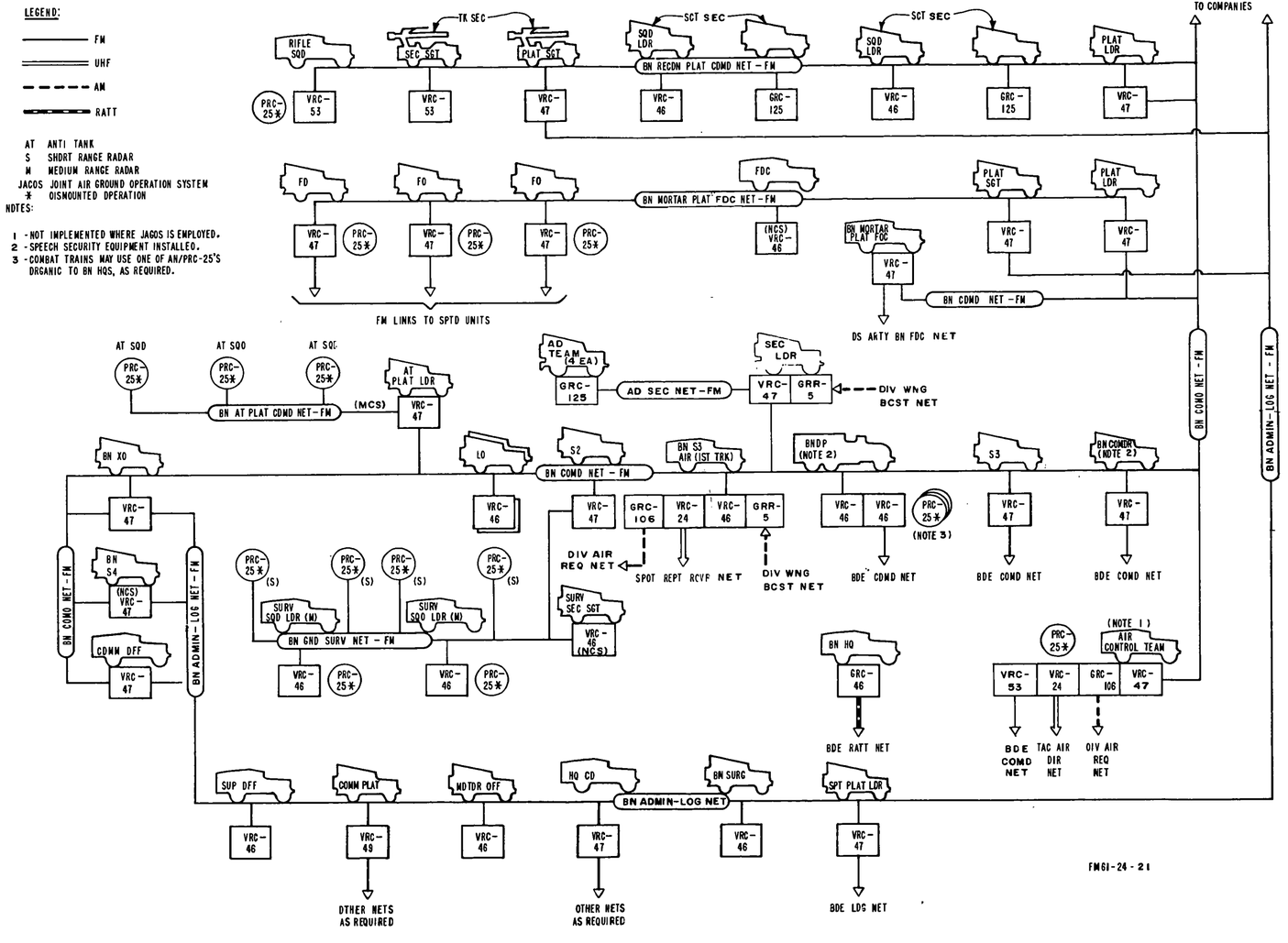
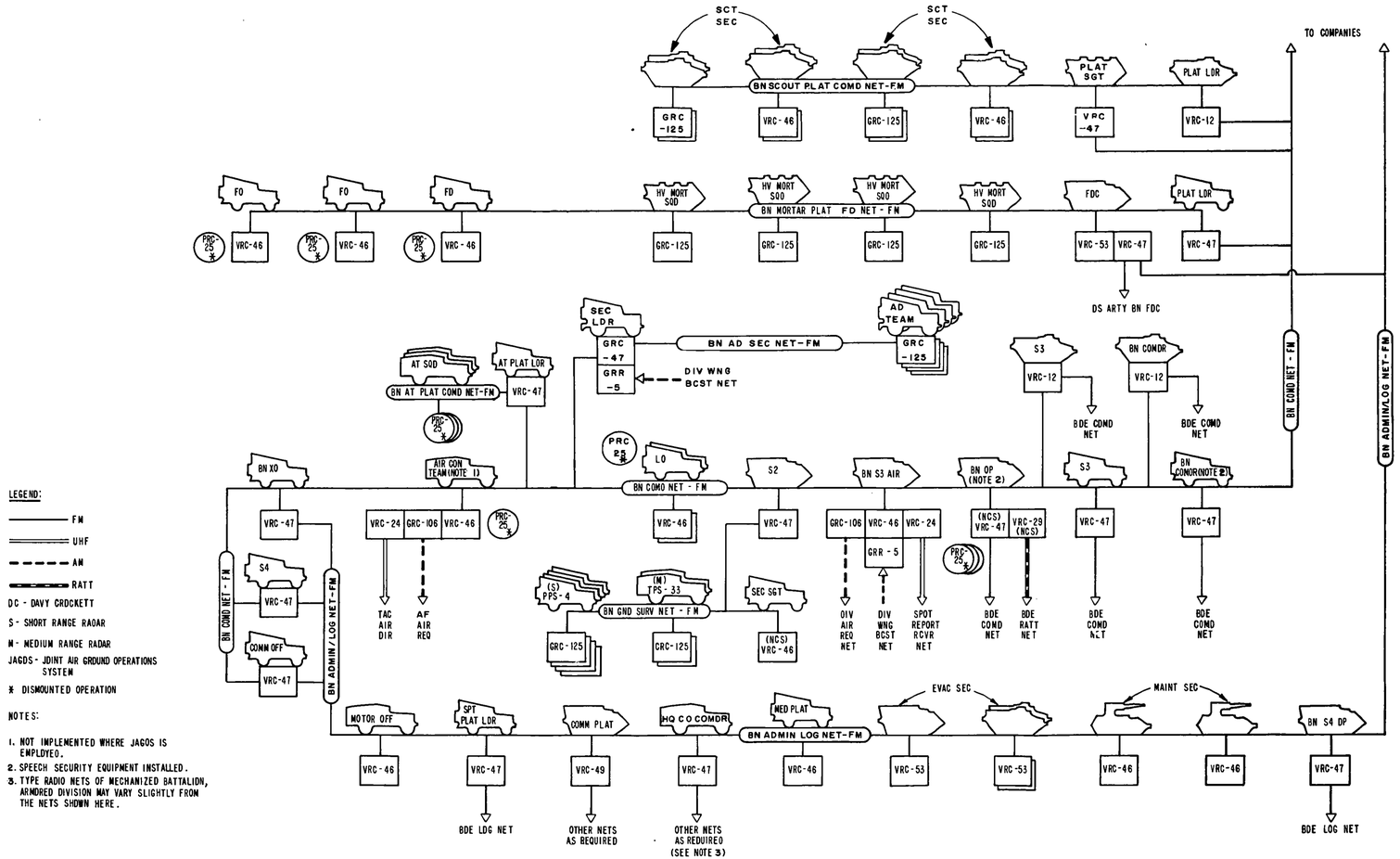


Figure 8–2. Type radio nets, infantry battalion.



LEGEND:

——— FM

═══ UHF

- - - - - AM

▬▬▬ RATT

DC - DAVY CROCKETT

S - SHORT RANGE RADAR

M - MEDIUM RANGE RADAR

JAGDS - JOINT AIR GROUND OPERATIONS SYSTEM

* DISMOUNTED OPERATION

NOTES:

1. NOT IMPLEMENTED WHERE JAGOS IS EMPLOYED.
2. SPEECH SECURITY EQUIPMENT INSTALLED.
3. TYPE RADIO NETS OF MECHANIZED BATTALION, ARMORED DIVISION MAY VARY SLIGHTLY FROM THE NETS SHOWN HERE.

FM 61-24-22

Figure 8–3. Type radio nets, mechanized battalion.

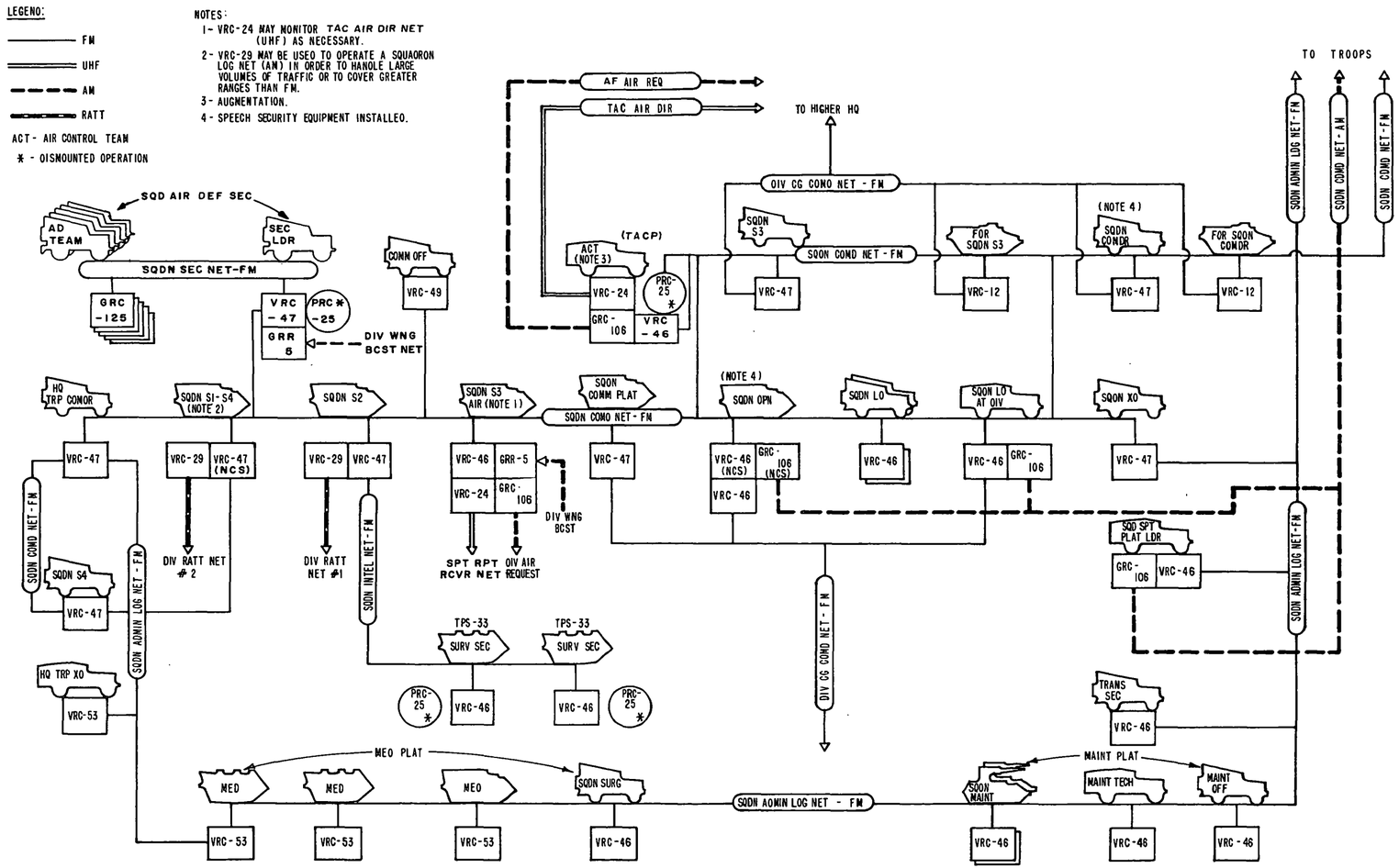


Figure 9–1. Type radio nets, armored cavalry squadron, armored, infantry or mechanized division.

FM 61-24-29

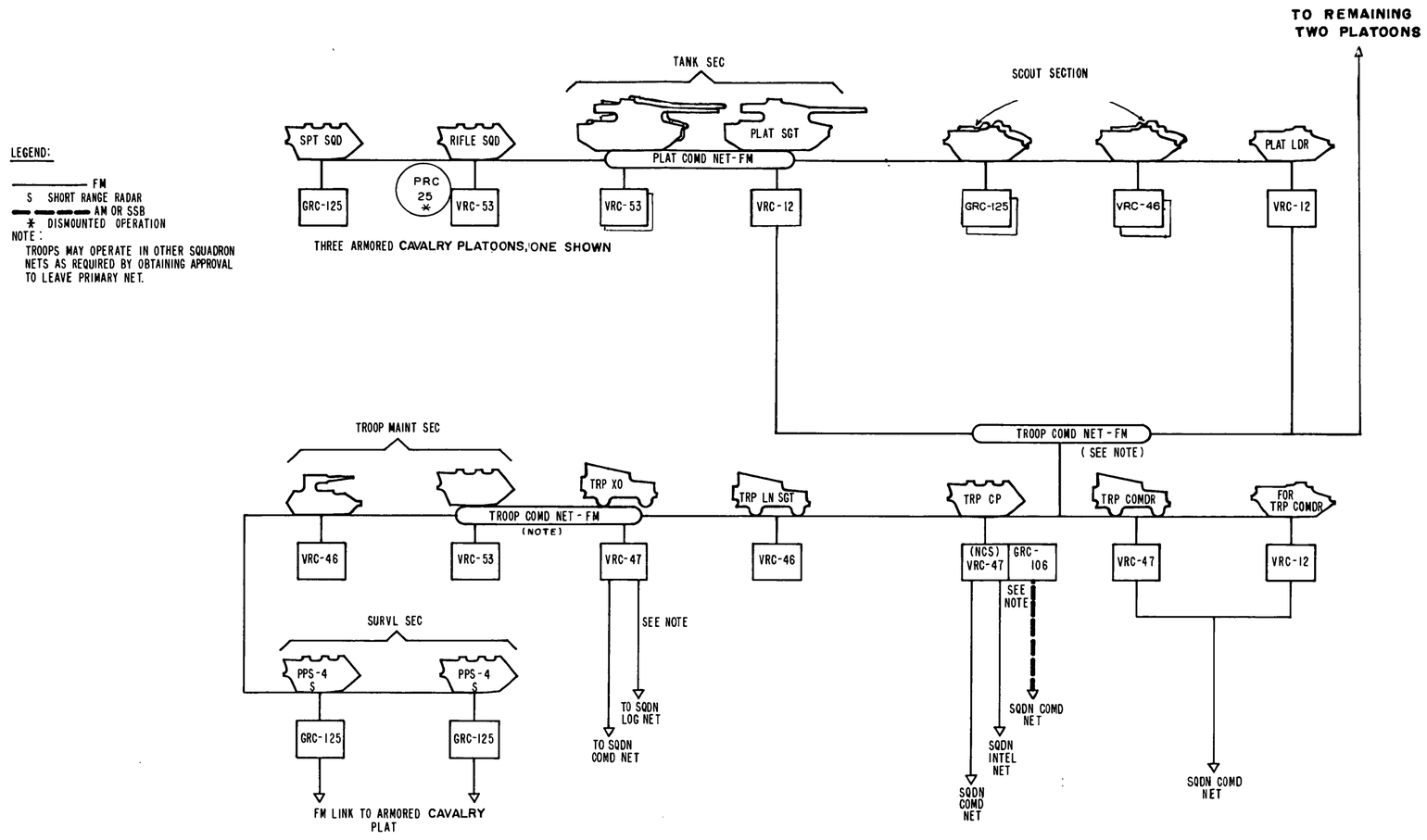


Figure 9–3. Type radio nets, armored cavalry troop, armored cavalry squadron, armored, infantry or mechanized division.

FM 61-24-31

LEGEND:

FM

UHF

AM

* DISMOUNTED OPERATION

NOTES:

1. PRC-25 TO SECTION LEADER ONLY.
2. VRC-24 MAY BE USED WHEN REQUIRED BY FORWARD AIR CONTROLLER IN TACTICAL AIR DIRECTION NET-UHF.
3. WHERE NOT OTHERWISE SPECIFIED, ARC-51'S ARE USED TO MONITOR THE COMMAND FREQUENCY OF THE UNIT BEING SUPPORTED.
4. GRC-19 AND ARC-95 MAY BE USED AS INTERIM SUBSTITUTES FOR THE GRC-106 AND ARC-102 RESPECTIVELY.

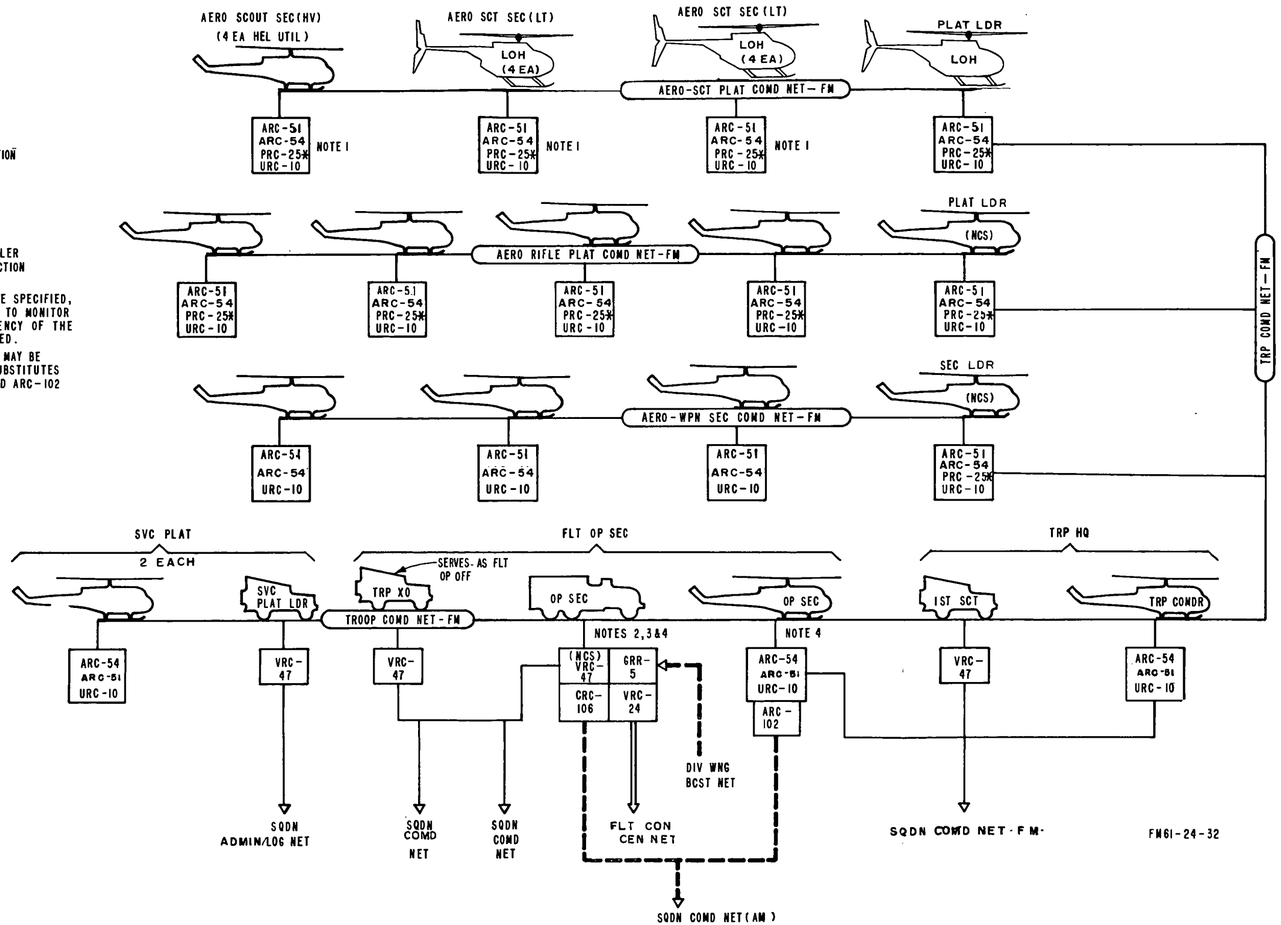


Figure 9-4. Type radio nets, air cavalry troop, armored cavalry squadron, armored, infantry or mechanized division.

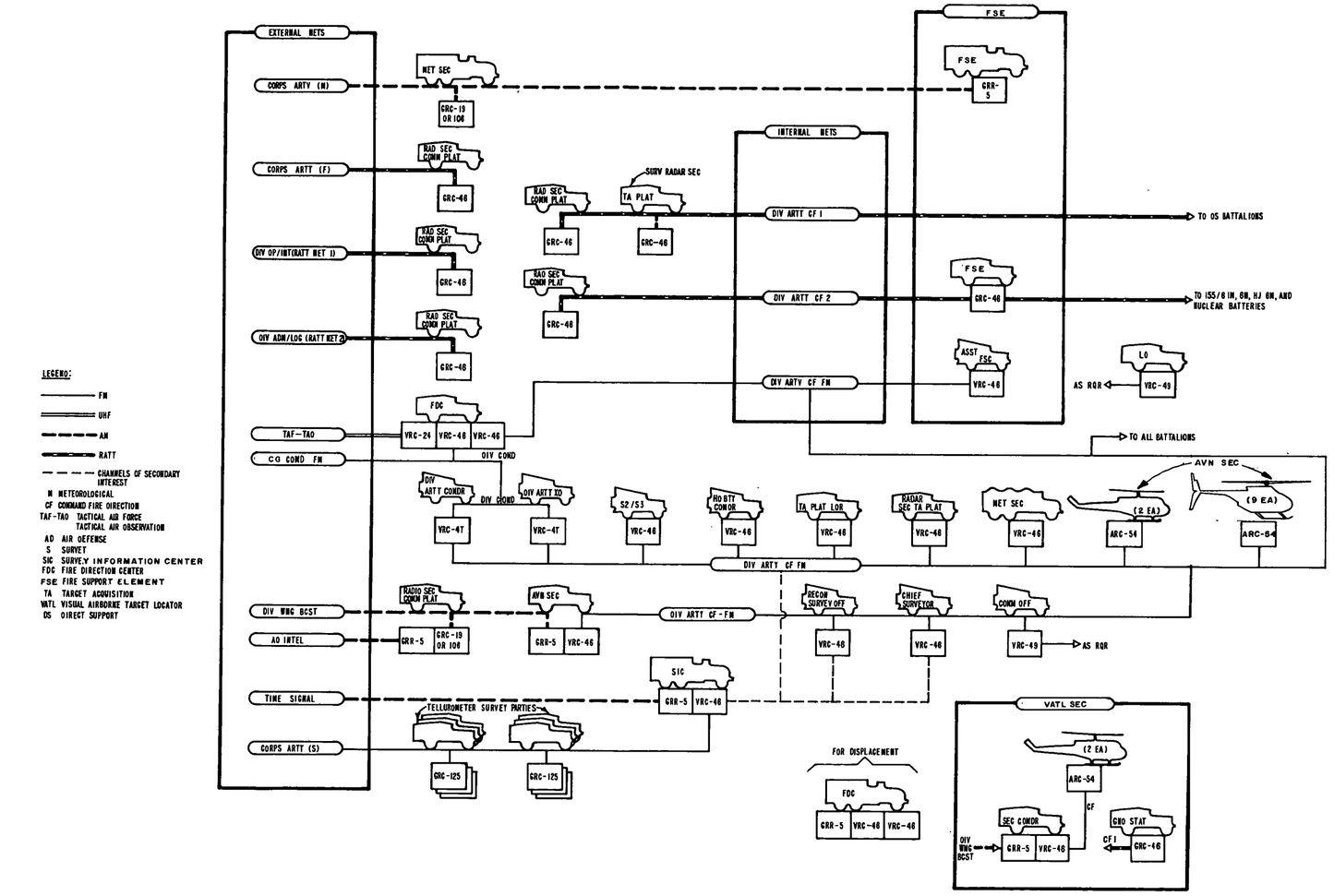


Figure 10–1. Type radio nets, armored, infantry or mechanized division artillery (division artillery headquarters and headquarters battery).

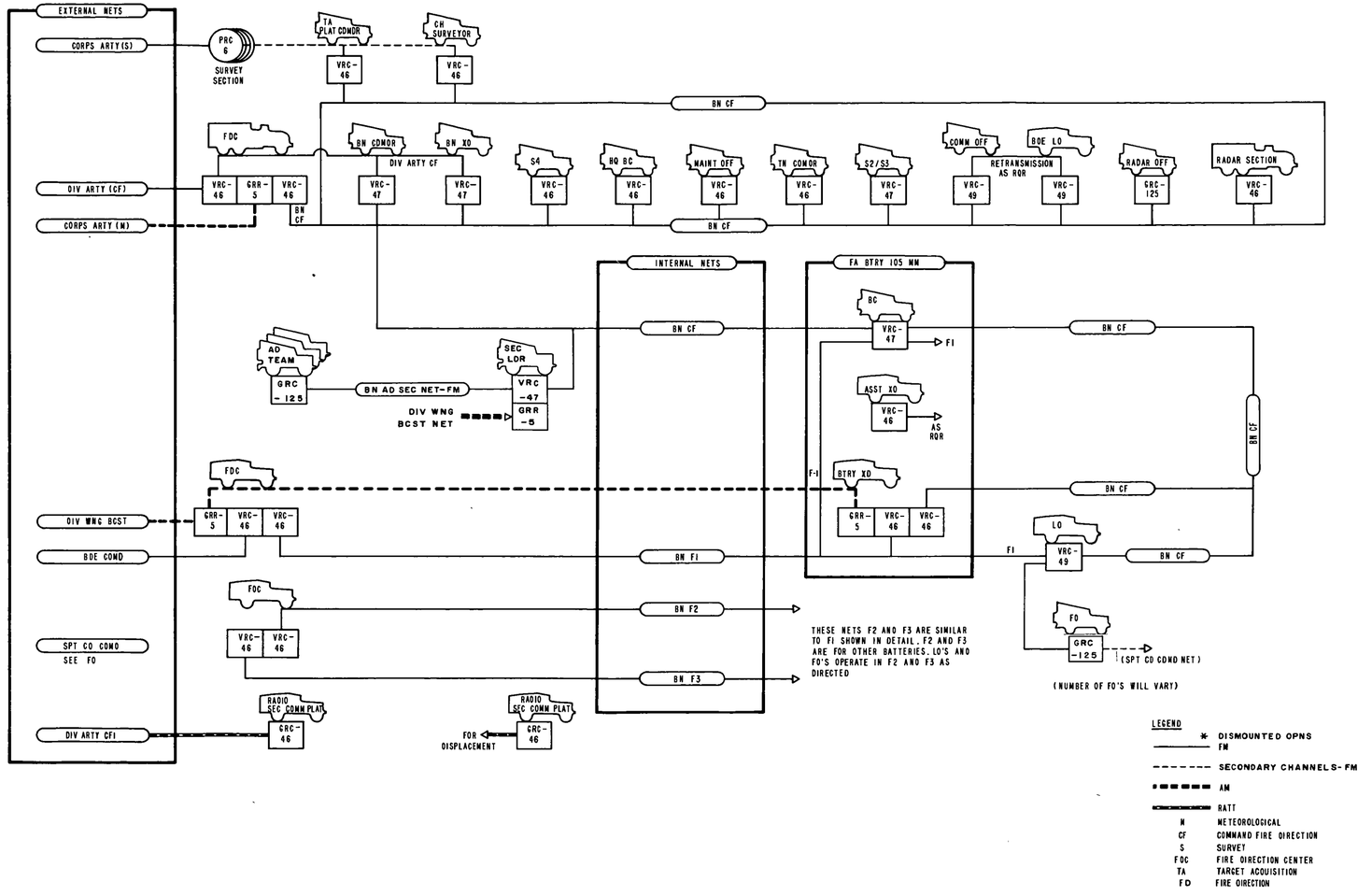


Figure 10–3. Type radio nets, field artillery battalion (DS), 105mm infantry division artillery.

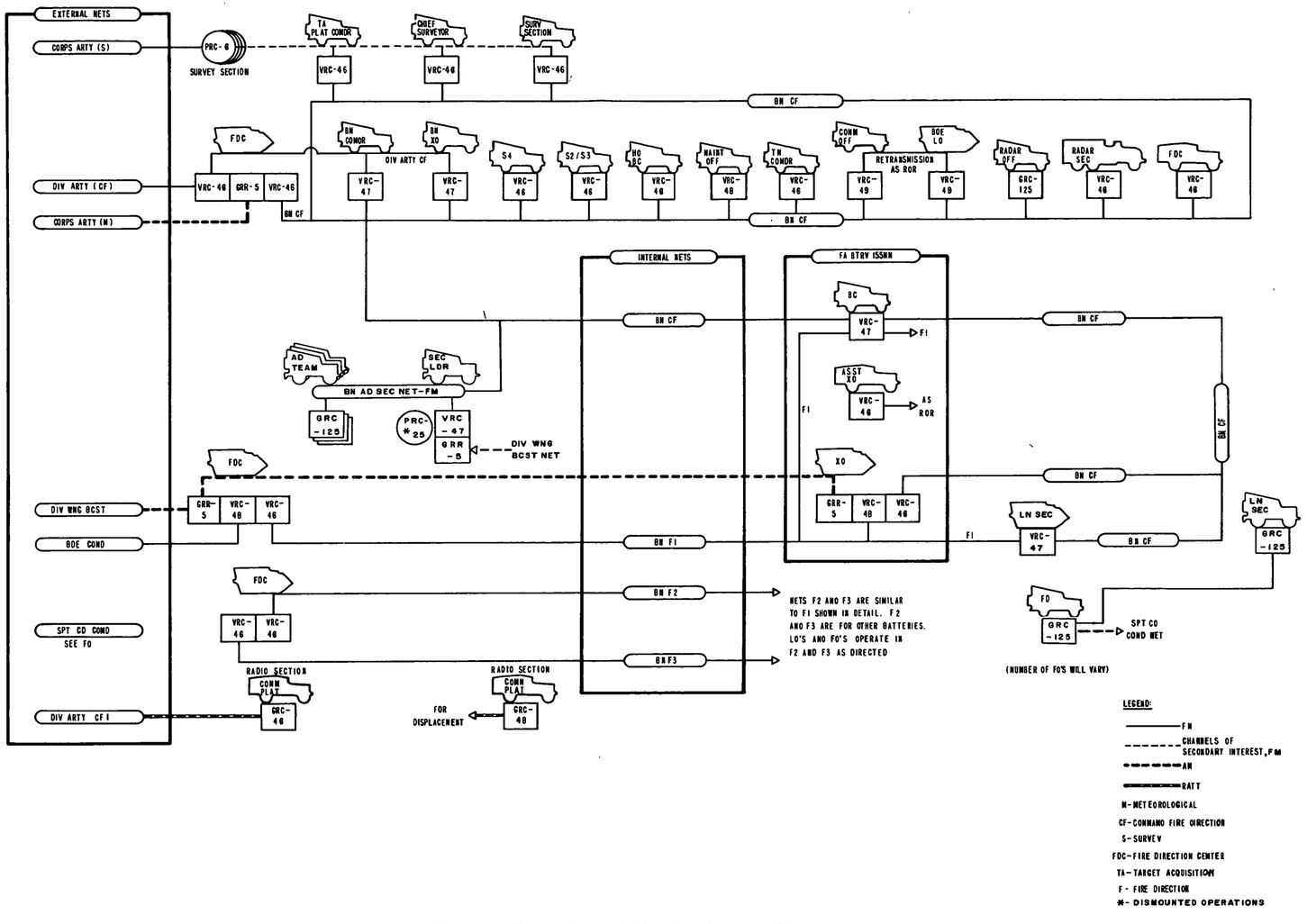


Figure 10–4. Type radio nets, field artillery battalion (DS), 155mm, armored or mechanized division artillery.

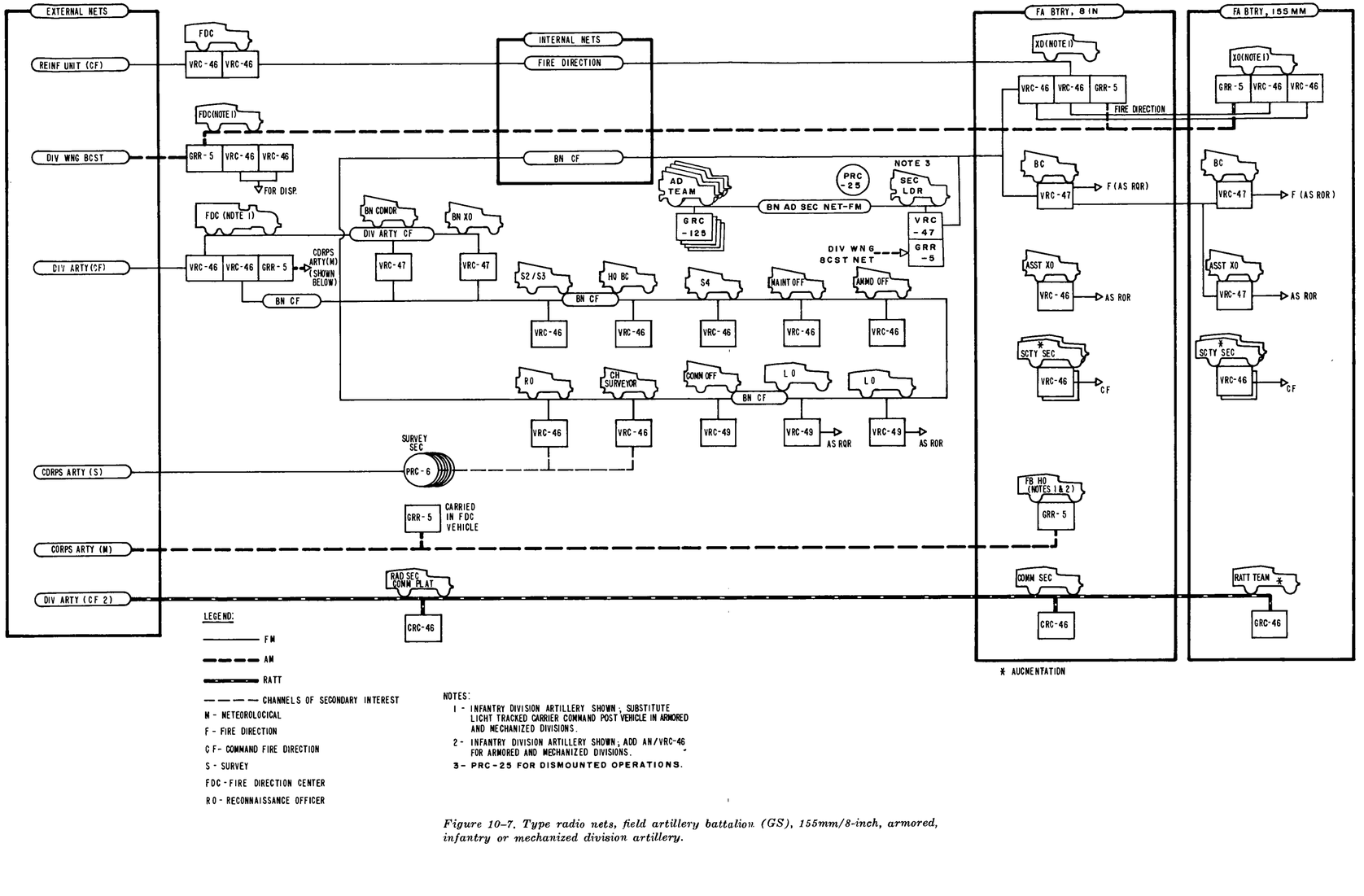


Figure 10–7. Type radio nets, field artillery battalion (GS), 155mm/8-inch, armored, infantry or mechanized division artillery.

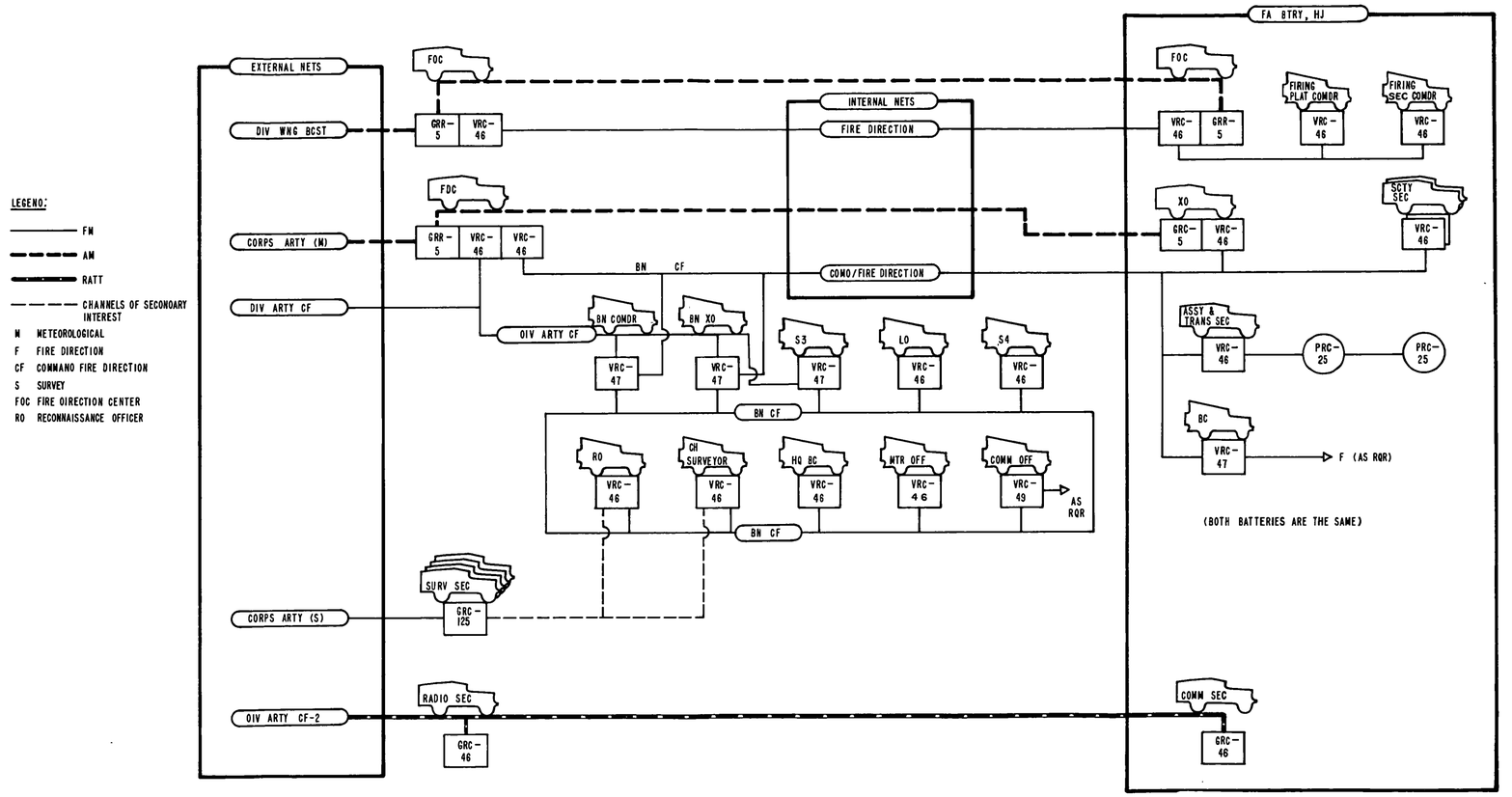


Figure 10–9. Type radio nets, field artillery battalion, Honest John, armored, infantry or mechanized division artillery.

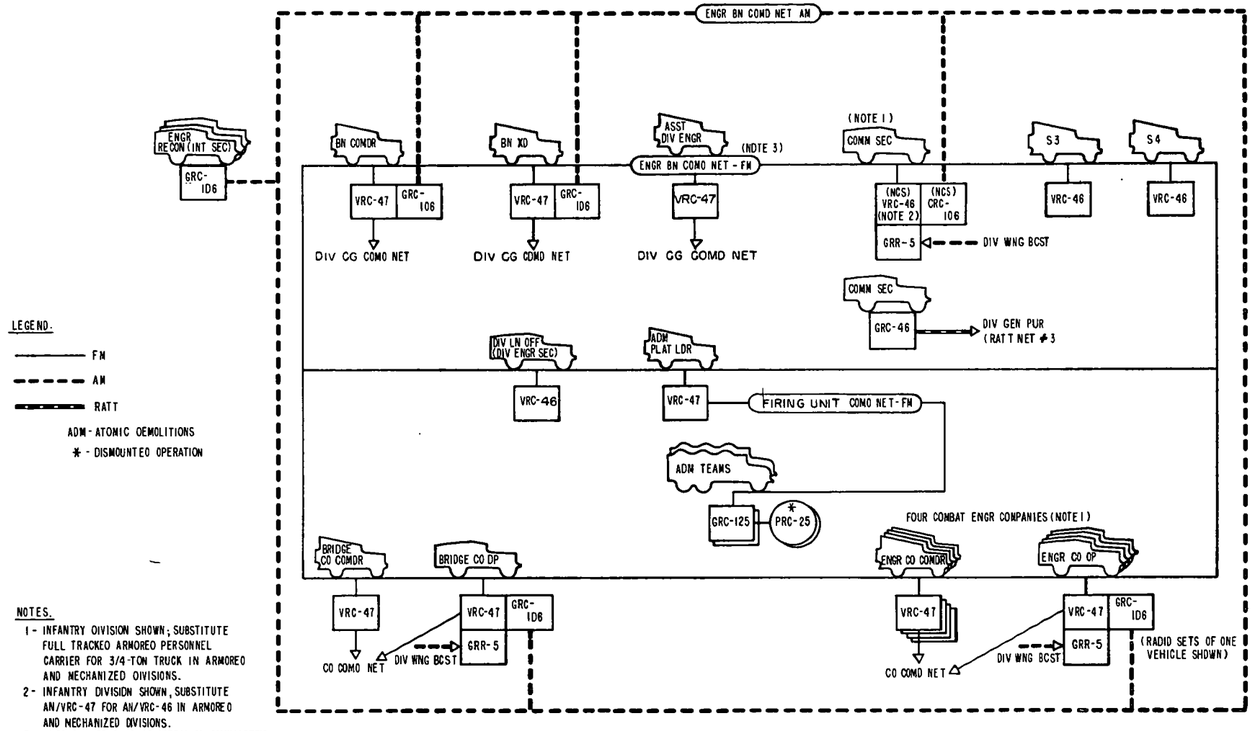


Figure 11–1. Type radio nets, engineer battalion, armored, infantry or mechanized division.

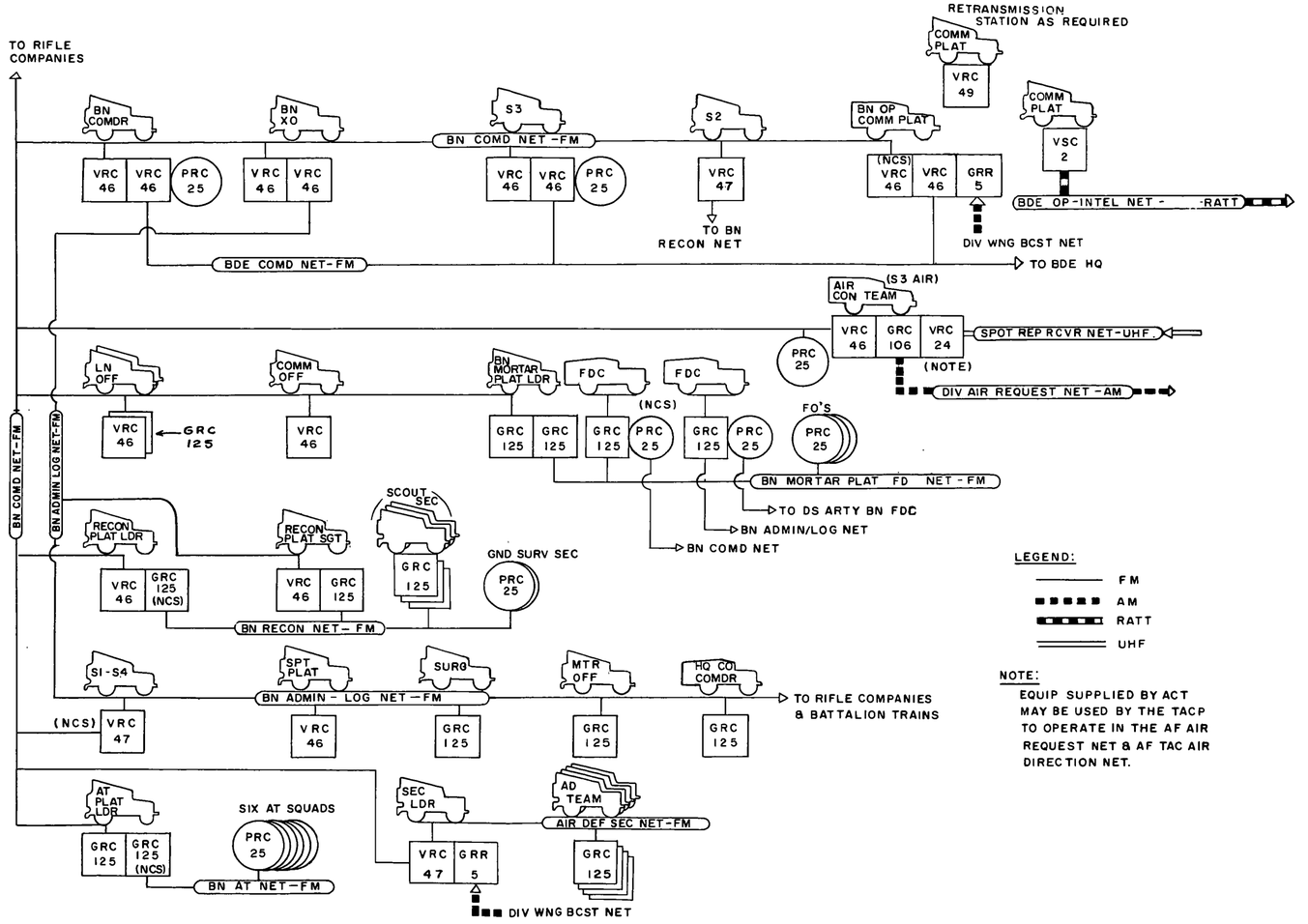


Figure 19–1. Type radio nets, headquarters and headquarters company, infantry battalion, airborne division.

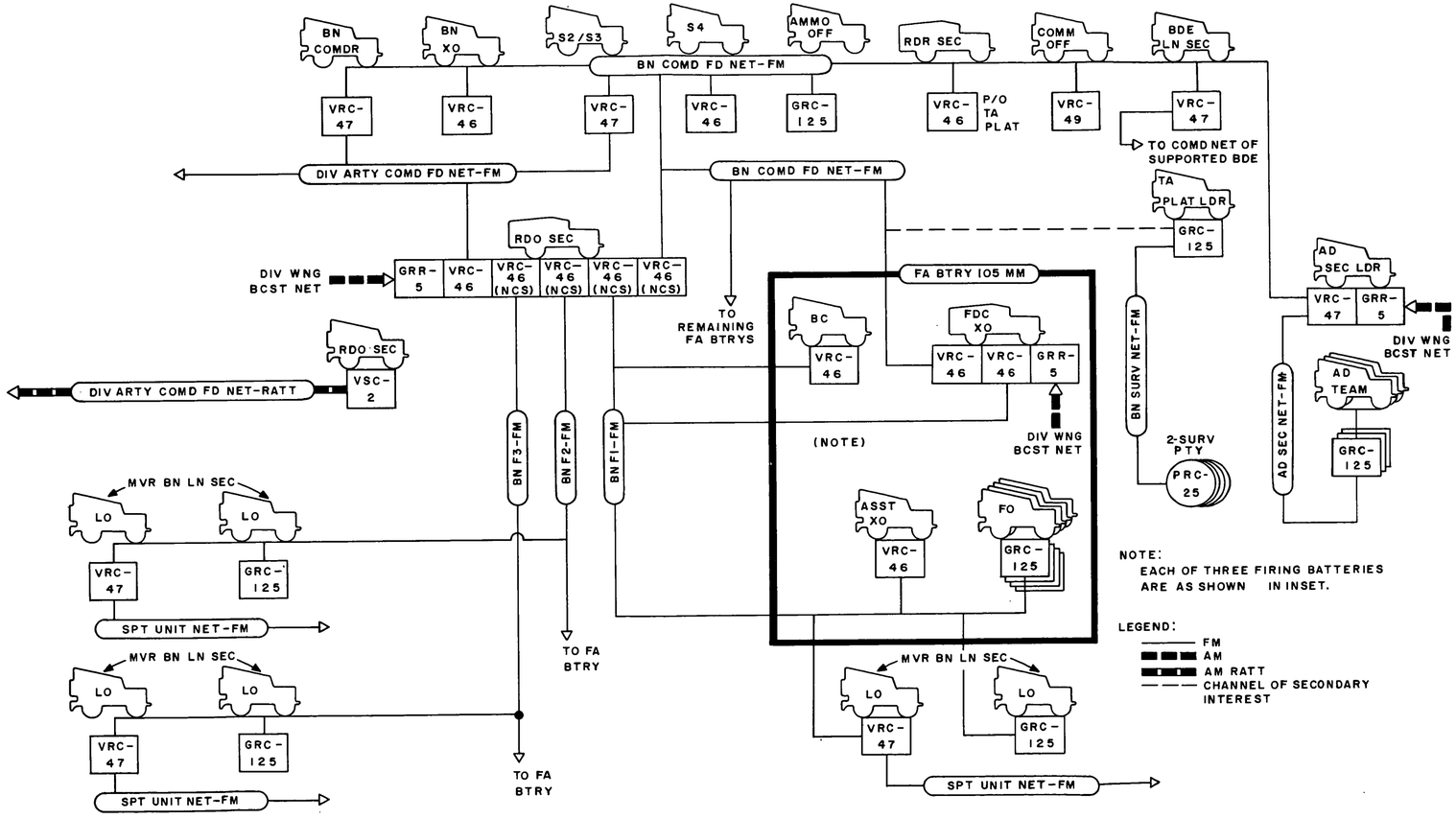


Figure 21–3. Type radio nets, field artillery battalion (DS), 105mm, airborne division.

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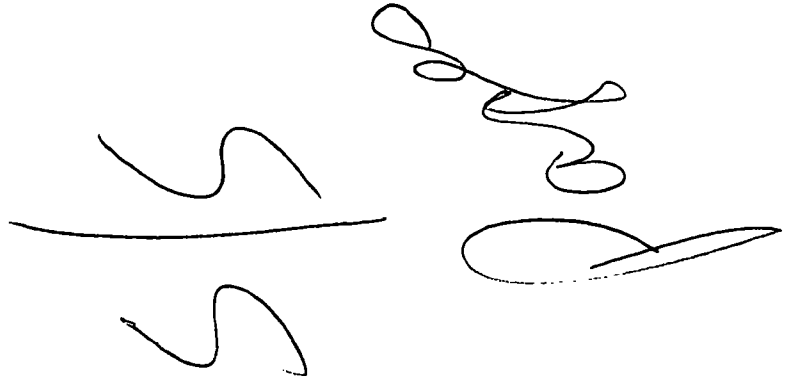

CHAPTER 1

INTRODUCTION

1-1. Purpose

This manual is a doctrinal guide for commanders, staff officers, and personnel concerned with communications in the armored, infantry, infantry (mechanized), airmobile, and airborne divisions as organized under TOE 7, 17, 37, 67, and 57. It presents essential guidelines which, when coupled with experience, judgment, and foresight, enable commanders and other key personnel to develop the most effective communications for the accomplishment of assigned missions.

1-2. Scope

a. The basic scope of this manual is confined to a detailed but nontechnical explanation of essential facts required to employ an efficient division tactical communication system under typical military conditions.

b. To facilitate use of this manual as a reference guide, it is divided into three parts:

(1) Part One: Communications in the Armored, Infantry, and Infantry (Mechanized) Divisions.

(2) Part Two: Communications in the Airborne Division.

(3) Part Three: Communications in the Airborne Division. (Part Three will be published later following finalization of pertinent TOE.)

c. Insofar as appropriate and practicable, material herein presented is applicable to—

(1) General war, to include a consideration for the employment of, and protection from, nuclear munitions and chemical, biological, and radiological agents, and operations in nuclear, chemical, or biological environments.

(2) Limited war.

(3) Cold war to include stability operations—appendix B contains material applicable to stability operations from the standpoint of essential signal communications.

d. The material in this manual agrees with applicable portions of STANAG 2043, Principles and Procedures for Establishing Communications (SOLOG 15R2).

1-3. References

a. Publications and other reference material pertaining to subjects within the scope of this manual are listed in appendix A. As indicated (para 1-2), appendix B presents general guidelines applicable to communication aspects in stability operations.

b. To avoid needless repetition, FM 24-1 should be used in conjunction with this manual. FM 24-1 presents basic doctrinal information on such topics as communication means, employment, principles, responsibilities, and security.

1-4. Comments on Manual

Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Commanding Officer, U.S. Army Combat Developments Command Communications-Electronics Agency, ATTN: Doctrine Division, Fort Monmouth, New Jersey 07703.

1-5. Designation of Units

a. Throughout this manual where the word *battalion* appears in general sense (battalion commander, battalion staff, battalion trains), it is considered as applying equally to the squadron. Likewise, a general reference to *company* applies equally to the cavalry troop and the artillery battery.

b. Hereafter in this manual, the infantry

(mechanized) division will be referred to as the mechanized division.

1-6. Personnel and Equipment Strength

Narrative and illustrative coverage of this manual is based on level one (full strength) allocations of communication personnel and equipment by pertinent TOE. When units operate at levels two and three, 90 percent and 80 percent of full strength respectively, some curtailment in communication employment may be necessary.

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APPENDIX A

REFERENCES

A–1. General

This appendix contains a selected list of publications pertinent to communications in armored, infantry (mechanized), and airborne divisions. For availability of items listed and other publications refer to DA Pamphlets 310–1, 310–3 and 310–4.

A–2. Army Regulations

(C)	AR 10–122	Meteorological Support for the U.S. Army.
	AR 115–10	U.S. Army Security Agency (U).
	AR 380–5	Safeguarding Defense Information.
	AR 380–26	Policy for use of Encrypt-for-Transmission-Only (EFTO) Procedure.
	AR 380–40	Safeguarding Crypto-Information.
(C)	AR 380–40–1	Safeguarding Crypto-Information (Supplement) (U).
	AR 380–41	Control of Cryptomaterial.
(C)	AR 380–51	Transmission of Classified Information (U).
	AR 525–25	Delineation of Service Responsibilities for Tactical Air Control Parties.

A–3. DA Pamphlets

(C)	DA PAM 310–9	Index of Communications Security (COMSEC) Publications (U).

A–4. Field Manuals

FM 1–5	Aviation Company.
FM 1–15	Divisional Aviation Battalions and Group.
FM 1–100	Army Aviation Utilization.
FM 5–135	Engineer Battalion, Armored, Infantry, and Infantry (Mechanized) Divisions.
FM 5–136	Engineer Battalion, Airborne and Airmobile Divisions.
FM 6–10	Field Artillery Communications.
FM 6–20–1	Field Artillery Tactics.
FM 6–20–2	Field Artillery Techniques.
FM 7–11	Rifle Company, Infantry, Airborne, and Mechanized.
FM 7–20	Infantry, Airborne Infantry, and Mechanized Infantry Battalions.
FM 7–30	Infantry, Airborne, and Mechanized Division Brigades.
FM 8–15	Division Medical Service, Infantry, Airborne, Mechanized, and Armored Divisions.
FM 9–30	Maintenance Battalion, Division Support Command.
FM 10–50	Supply and Transport Battalion, Division Support Command.
FM 11–21	Tactical Signal Communications Systems, Army, Corps, and Division.
FM 11–50	Signal Battalion, Armored, Infantry, and Infantry (Mechanized) Divisions.

	FM 11–57	Signal Battalion, Airborne Division.
	FM 12–11	Administration Company, Division and Separate Brigade.
	FM 17–1	Armor Operations.
	FM 17–15	Tank Units, Platoon, Company, and Battalion.
	FM 17–30	The Armored Division Brigade.
	FM 17–36	Divisional Armored and Air Cavalry Units.
	FM 19–1	Military Police Support, Army Divisions and Separate Brigades.
	FM 21–30	Military Symbols.
	FM 21–60	Visual Signals.
	FM 24–1	Tactical Communications Doctrine.
	FM 24–16	Signal Orders, Records and Reports.
	FM 24–17	Tactical Communications Center Operations.
	FM 24–18	Field Radio Techniques.
	FM 24–19	Communications-Electronics Reference Data.
	FM 24–20	Field Wire and Field Cable Techniques.
	FM 24–21	Field Radio Relay Techniques.
	FM 30–5	Combat Intelligence.
	FM 30–20	Aerial Surveillance-Reconnaissance, Field Army.
(C)	FM 32–5	Signal Security (SIGSEC)(U).
(C)	FM 32–20	Electronic Warfare (Ground Based)(U).
(S)	FM 32–20A	Electronic Warfare (Ground Based)(U).
(C)	FM 32–20–1 (TEST)	Electronic Warfare (Ground Based)(U).
	FM 44–1	U.S. Army Air Defense Employment.
	FM 54–2	The Division Support Command.
	FM 61–100	The Division.
	FM 100–27	U.S. Army/U.S. Air Force Doctrine for Tactical Airlift Operations

A–5. Tables of Organization and Equipment

TOE 1–55	Aviation Battalion, Airborne Division.
TOE 1–75	Aviation Battalion, Infantry Division.
TOE 5–25	Engineer Battalion, Airborne Division.
TOE 5–145	Engineer Battalion, Armored Division or Engineer Battalion, Infantry Division (Mechanized).
TOE 5–155	Engineer Battalion, Infantry Division.
TOE 6–100	Infantry Division Artillery.
TOE 6–155	Field Artillery Battalion, 105-mm, Towed, Infantry Division.
TOE 6–165	Field Artillery Battalion, 155-mm, Towed, 8-inch, Self-Propelled, Infantry Division.
TOE 6–175	Field Artillery Battalion, HONEST JOHN, Armored Division or Field Artillery Battalion, HONEST JOHN, Infantry Division or Field Artillery Battalion, HONEST JOHN, Infantry Division (Mechanized).
TOE 6–200	Airborne Division Artillery.
TOE 6–201	Headquarters and Headquarters Battery, Airborne Division Artillery.
TOE 6–215	Field Artillery Battalion, 105-mm, Towed, Airborne Division or Field Artillery Battalion, 105-mm, Towed, Separate Airborne Brigade.
TOE 6–300	Armored Division Artillery or Infantry Division (Mechanized) Artillery.
TOE 6–302	Headquarters and Headquarters Battery, Armored Division Artillery or Headquarters and Headquarters Battery, Infantry Division Artillery or Headquarters and Headquarters Battery, Infantry Division (Mechanized) Artillery.

TOE 6-355	Field Artillery Battalion, 155-mm, 8-inch, Self-Propelled, Armored Division or Field Artillery Battalion, 155-mm, 8-inch, Self-Propelled, Infantry Division (Mechanized).
TOE 6-365	Field Artillery Battalion, 155-mm, Self-Propelled, Armored Division or (Mechanized). Field Artillery Battalion, 155-mm, Self-Propelled, Infantry Division
TOE 7	
TOE 7-4	Headquarters and Headquarters Company, Infantry Division.
TOE 7-15	Infantry Battalion, Infantry Division or Infantry Battalion, Separate Infantry Brigade.
TOE 7-35	Infantry Battalion, Airborne Division or Infantry Battalion, Separate Airborne Brigade.
TOE 7-42	Headquarters and Headquarters Company, Infantry Division Brigade.
TOE 7-45	Infantry Battalion (Mechanized), Armored Division or Infantry Battalion (Mechanized), Infantry Division (Mechanized) or Infantry Battalion (Mechanized), Separate Armored Brigade or Infantry Battalion (Mechanized), Separate Infantry Brigade or Infantry Battalion (Mechanized), Separate Infantry Brigade (Mechanized).
TOE 8-35	Medical Battalion, Armored Division or Medical Battalion, Infantry Division or Medical Battalion, Infantry Division (Mechanized).
TOE 8-65	Medical Battalion, Airborne Division.
TOE 10-37	Supply Company, Support Command, Airborne Division.
TOE 11-35	Signal Battalion, Armored Division or Signal Battalion, Infantry Division or Signal Battalion, Infantry Division (Mechanized).
TOE 11-215	Signal Battalion, Airborne Division.
TOE 12-37	Administration Company, Support Command, Armored Division or Administration Company, Support Command, Infantry Division, or Administration Company, Support Command, Infantry Division (Mechanized).
TOE 12-157	Administration Company, Support Command, Airborne Division.
TOE 17	Armored Division.
TOE 17-4	Headquarters and Headquarters Company, Armored Division.
TOE 17-35	Tank Battalion, Armored Division or Tank Battalion, Infantry Division or Tank Battalion, Division (Mechanized) or Tank Battalion, Separate Armored Brigade or Tank Battalion, Separate Infantry Brigade or Tank Battalion, Separate Infantry Brigade (Mechanized).
TOE 17-42	Headquarters and Headquarters Company, Armored Division Brigade.
TOE 17-75	Armored Cavalry Squadron, Airborne Division.
TOE 17-105	Armored Cavalry Squadron, Armored Division or Armored Cavalry Squadron, Infantry Division or Armored Cavalry Squadron, Infantry Division (Mechanized).
TOE 19-27	Military Police Company, Armored Division or Military Police Company, Infantry Division or Military Police Company, Infantry Division (Mechanized).
TOE 19-67	Military Police Company, Airborne Division.
TOE 29-1	Support Command, Infantry Division.
TOE 29-2	Headquarters, Headquarters Company and Band, Support Command, Armored Division or Headquarters, Headquarters Company and Band, Support Command, Infantry Division or Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized).

TOE 29-5	Support and Transport Battalion, Infantry Division.
TOE 29-11	Support Command, Infantry Division (Mechanized).
TOE 29-15	Maintenance Battalion, Infantry Division.
TOE 29-21	Support Command, Armored Division.
TOE 29-25	Maintenance Battalion, Infantry Division (Mechanized).
TOE 29-35	Maintenance Battalion, Armored Division.
TOE 29-51	Support Command, Airborne Division.
TOE 29-52	Headquarters, Headquarters Company, and Band, Support Command, Airborne Division.
TOE 29-55	Maintenance Battalion, Airborne Division.
TOE 29-65	Supply and Transport Battalion, Armored Division or Supply and Transport Battalion, Infantry Division (Mechanized).
TOE 37	Infantry Division (Mechanized).
TOE 37-4	Headquarters and Headquarters Company, Infantry Division (Mechanized).
TOE 37-42	Headquarters and Headquarters Company, Infantry Division (Mechanized) Brigade.
TOE 57	Airborne Division.
TOE 57-4	Headquarters and Headquarters Company, Airborne Division.
TOE 57-42	Headquarters and Headquarters Company, Airborne Division Brigade.

A-6. Technical Manuals

TM 38-750	Army Equipment Record Procedure.
TM 38-750-1	Maintenance Management: Field Command Procedures.

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